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TELEPHONE ENGINEER & MANAGEMENT

the telephone industry magazine

V.63 #17

THE COMING REVOLUTION, by C. D. Ehinger

Credit – An Important Six-Letter Word, by Bill Corman

THE ILLINOIS "TELETRAINER" PROGRAM

Plant Notes On New Developments, by John S. Reed

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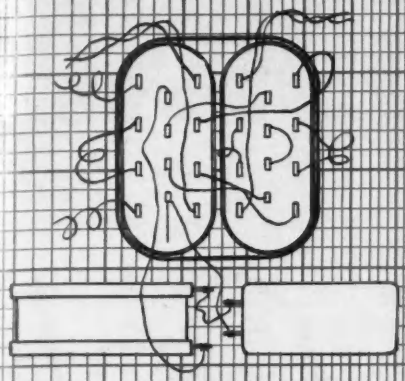

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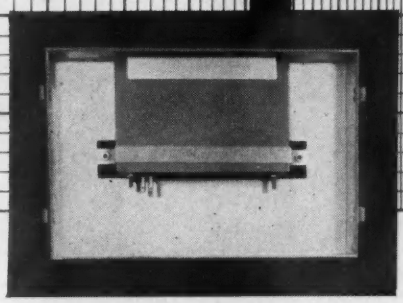

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FRONT COVER

A joint coordination meeting between the USITA Engineering Committee and A. T. & T. Co. representatives was held recently in New York City. Front cover shows (l. to r.): O. L. MOODY, staff coordinator, Bell-Independent Relations, A. T. & T.; W. A. PITBLADDO, Rochester, N. Y.; A. A. WILSON, Mattoon, Ill.; L. L. RUGGLES, Chicago, director, USITA Subcommittee on Direct Distance Dialing; H. E. WEPPLER, toll planning engineer, A. T. & T.; W. A. STEVENS, systems planning engineer, A. T. & T.; H. DISSTON, assistant staff coordinator, Bell-Independent Relations, A. T. & T.; W. RUPP, acting equipment & building engineer, A. T. & T.; P. H. HENSON, Kansas City, Mo., chairman, USITA Engineering Committee; C. M. MAPES, assistant chief engineer, A. T. & T.; M. S. BODINE, Jefferson City, Mo., chairman, USITA Plant Committee; R. P. JUDY, assistant vice pres., A. T. & T.; R. J. LOVELAND, San Francisco; A. C. OCKER, metropolitan planning engineer, A. T. & T.; F. D. REESE, New York, N. Y.; T. A. McDERMOTT, engineer, A. T. & T., and F. BARNES, JR., Rock Hill, S. C., director, USITA Subcommittee on Transmission & Protection.

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to increased revenue and profits...

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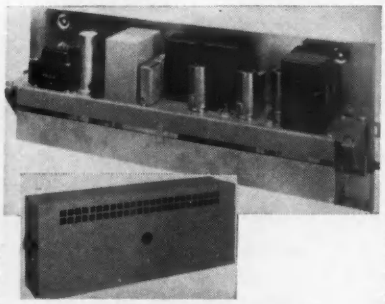

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INDUSTRY OBSERVATIONS

by L. A. GRITTEN

"When Toll Rates Are Slashed"

"Should the Independent segment of the telephone industry adopt a policy of vigorous intervention in every Bell rate case, national or state, to ensure adequate consideration of the interests of Independent companies???"

Total Intervention?

EVERY TRAGEDY should include a little comic relief. The F.C.C.'s answer to widely-advertised Bell System appeals to halt inflation, a $50 million slash of A.T.&T. overcharges, must have given the commission staff a chuckle; but it offers nothing amusing to the badly under-compensated Independents. It is one more chapter in our long history of toll compensation inequity and frustration.

If our small Independents are to survive, they must have proper consideration and fair treatment from the Bell System and from the regulatory commissions. Probably we need an industry-wide policy of vigorous intervention in every Bell rate case, national or state. The united strength of our national and state associations, with any political aid that we may enlist, should be used to ensure adequate consideration of Independent interests in every rate case that affects any of our companies. Then we should not be utterly ignored in a vital decision, as we have been by the A.T.&T. and the F.C.C. in regard to this $50 million toll reduction.

* * *

Thrills Without Frills

DO YOU EVER explore the stands of paperbacks with the bare-breasted beauties on the covers, looking for literary excitement? Look no further. Here is a real thriller for you:

"Space Handbook: Astronautics and its Applications," the Staff Report of the Select Committee on Astronautics and Space Exploration

L. A. GRITTEN'S "Industry Observations" appear exclusively in "Telephone Engineer & Management."

(House Document #86) is published by the U. S. Printing Office in Washington, D. C. It is 252 pages of facts and diagrams, more amazing than any fiction. It was prepared for layman consumption by the RAND Corporation of Santa Monica, Calif. It tells what we — and the Russians — have done and are doing in this marvelous race into the future. From the internal evidence of Russian scientific reports, RAND comments: ". . . one cannot help but be impressed by the boldness, the scope and the dedication of the Soviet effort toward the ultimate conquest of the cosmos; i.e. manned interplanetary travel."

* * *

Hints On Cooking

JACK HALEY, popular executive secretary of the Texas Telephone Association, referring to our remarks about the use of explosives, comments: "When dynamite was carried by all the tough guys in the business . . . many gangs thawed out frozen dynamite in a hot water can

XY® TOLL TICKETING*...

will make money for you...

The Stromberg-Carlson Toll Ticketing System is created to put more profit in your operation; yet is simple and economical in design.

Fully automated, its magnetic tape storage principle permits playback information to feed into typewriter, card-punching machine or punched tape.

Get the extra revenue of DDD now . . .
with money-making XY Toll Ticketing.

Printed circuit board is from XY Toll Ticketing accounting chain.

* Complete Toll Accounting.

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ALWAYS
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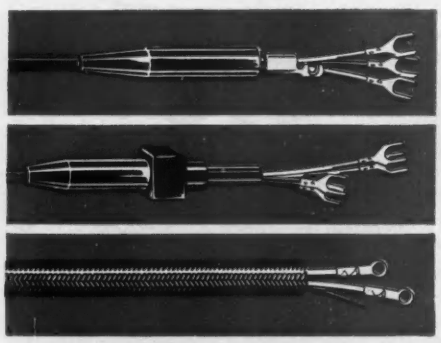
It's as simple as that! . . . and Commercial installations are proving this point to hundreds of users year after year. So whenever you order cords—remember, A-B-C and be satisfied!

You name 'em...we make 'em!



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QUALITY CORDS FOR ALL MAKES AND TYPES OF TELEPHONE INSTRUMENTS

over a fire right out in the field." That is tough enough, but it pales beside what these A.E.C. scientists are doing with "hot" radioactive materials. We'd sooner fry dynamite!

* * *

Why Insure?

AT WESTPORT, Washington, near the entrance to Grays Harbor, we met R. H. Mumaw, president of the Cohasset Beach Telephone Company, operating over 850 stations in two A.E. dial exchanges. Grays Harbor was discovered by Captain Robert Gray in 1792, since then it has been rediscovered by thousands of tourists, attracted by miles of perfect surf-lined beach, a wonderful speedway for automobiles; by clam-digging that is easy when you know how; and by what is modestly described as the best salmon fishing in the world.

Mr. Mumaw was interested in the T.E.&M. discussions of insurance. He says he finds it apparently impossible to obtain insurance on an unattended dial plant, that will cover damage done by fire caused by an outside contact with power lines. As that is, by long odds, the most likely cause of fire in an unattended dial plant housed in concrete, what is the use? We would like to hear from others about this.

* * *

Efficiency Before Censorship

A WELL-KNOWN advertising agency has been denied the right to mail postcard reproductions of Goya's "The Naked Maja." When one considers the mass of trash, pornographic and otherwise, that does go through the mail, this rejection of a classic portrayal of the human form seems merely stupid.

We know of no law of God or the U. S. Constitution that gives post office officials a mandate to poke their noses into our morals. Energy expended in that sort of censorship might be better applied to increasing the speed and efficiency of mail deliveries. An article in Newsweek, July 13, denounced the inefficiency of U. S. postal methods and stated, what every traveler knows, that mail service in France and England is much better and faster.

When we become Dictator of these United States (!!) we shall at once call upon A.T.&T. to exercise yet another communications function and run the post office on contract. With help from the Independents, of course, they would do a much better job for less money.

* * *

A Few More Strikes And We're Out

WHAT HAPPENS to the steel industry in its current annual bout is less important than the effect of all these annual increases on the rest of us. The average hourly earning in industrial occupations in Japan is 22¢; in Italy it is 43¢; in West Germany, 55¢; in the United Kingdom, 61¢; in Sweden, 83¢; in Canada, $1.59. In the United States the figure is $2.08. In Russia and China?

That disparity may explain why our 1958 exports of manufactured goods were $1 billion less than in 1957, while during the same year our imports climbed $400 million. Neither our industrial competitors nor our Cold War enemies could ask for better assistance than we are giving them with our tolerance of the inflationary annual increase regardless of production.

* * *

Inflation Perils

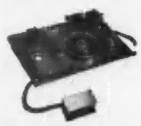
"TELEFLASH" (Mountain States T. & T. Co.) informs us that "every telephone handset contains a little more than 1/20 of a teaspoon of carbon granules." That recalls the classic story of the California miner in the 'eighties whose telephone didn't talk loud enough. He took the transmitter to pieces. In doing so, he spilled the carbon granules on the floor. With true Western resource he replaced them with black gunpowder from a cartridge. It worked fine for a second or two until a spark between two granules ended the experiment — and the miner.

You are invited . . . to tell our authors about problems on which you'd like to have an opinion. We'll welcome the opportunity to discuss as many as possible in TE&M's regular departments.

XY® TOLL TICKETING*...

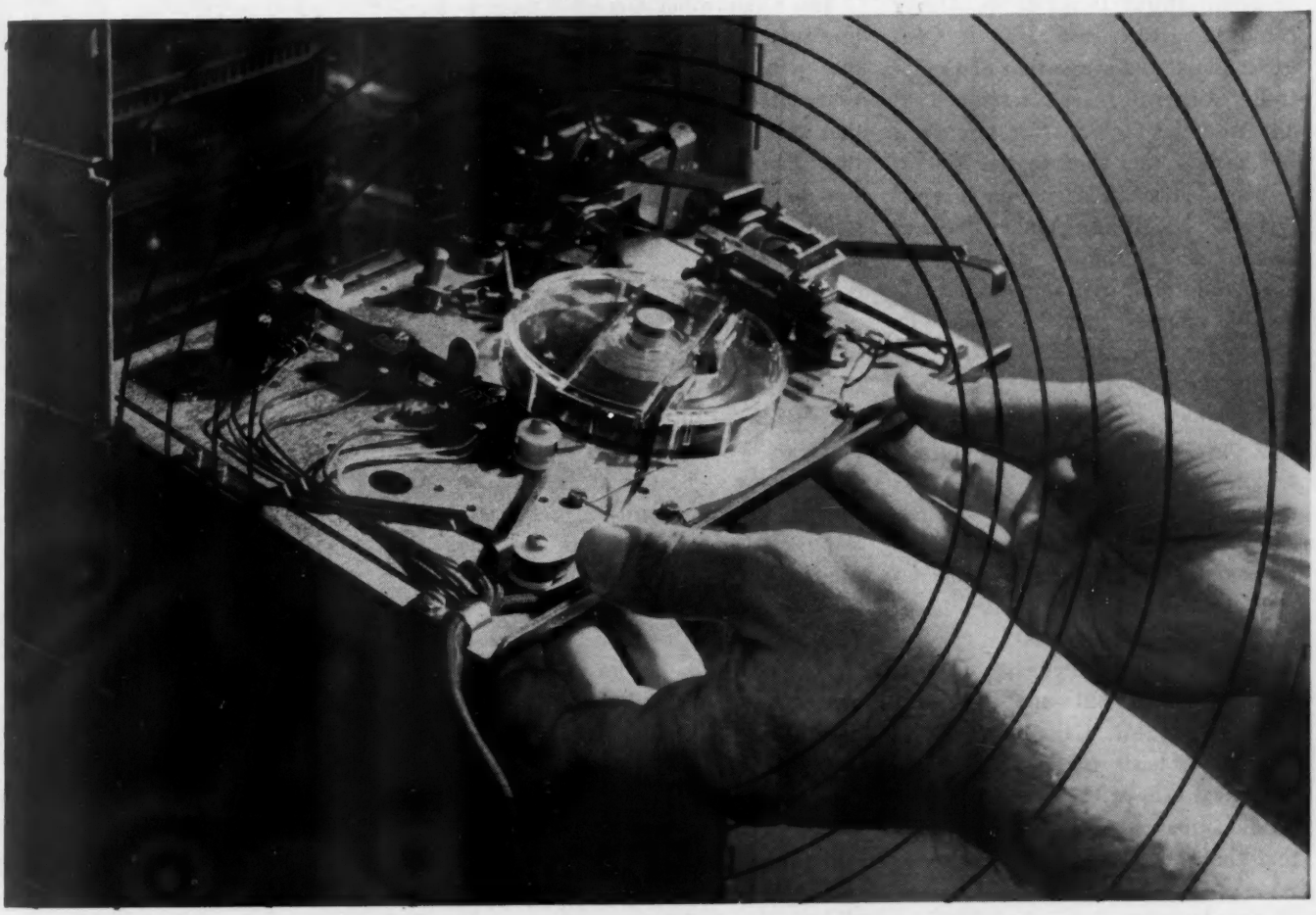
completely compatible, fully flexible...

With Stromberg-Carlson Toll Ticketing in your exchange, your subscribers can dial directly into the nationwide system. Magnetic tape recorders store and release information **without personal attention, transport** or **reloading.**



Get the extra revenue of DDD now–with XY Toll Ticketing.

Magnetic tape recorders in XY Toll Ticketing System are easy to jack in-and-out.



* **Complete Toll Accounting.**

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Comptroller Agreeable To Separate Sale of Alaska's Communications Facilities

***Comptroller General urges specific provision aiding small companies which may be interested in purchasing government owned communications facilities in Alaska . . . BDSA predicts gain of* 3,933,000 *telephones for* '59. — *A gain of* 5.9% *over* 1958.**

THE NUMBER of prospective buyers of the government-owned communications facilities in Alaska could be greatly increased if Congress adopts the suggestion of Comptroller General Joseph Campbell to advertise the facilities for sale on a bid basis, rather than by negotiation as provided for in legislation currently before the House Armed Services Committee.

In addition, Mr. Campbell has advised Congress that he would be agreeable to a "piecemeal" sale of the properties — the separate disposal of telephone and telegraph facilities now operated by the Army, the Air Force, and the Federal Aviation Agency. Secretary of Defense Neil McElroy said the estimated cost to the government for the facilities, less depreciation, was on July 1, 1958, approximately $158,000,000.

In a six-page statement of comments on the bill and proposed amendments, Mr. Campbell said he found "no basis to object" to any piecemeal sale of the properties, but he did object strongly to suggestions that the FCC be given authority to review any contemplated sale instead of the Attorney General's office, as provided in the original draft of the measure.

Mr. Campbell also urged that the bill "specifically provide that small telephone companies be afforded an opportunity to participate in the proposed sale of the system," and he urged public hearings to determine all questions of "public interest" regarding the sale of the properties.

The Comptroller General's suggestion regarding public hearings is one that will likely be adopted by the Committee, thus making more certain that sale of the Alaska communications facilities, long under consideration but never formally proposed in legislation until this year, will be a long time being fulfilled. House Armed Services Committee Chairman Carl Vinson (D., Ga.) has said his committee will await Senate action on the legislation, and a bill has not even been introduced in the Senate.

When the legislative draft was first sent up to Capitol Hill last February, Defense Secretary McElroy said the sale of the facilities would be on a negotiated base without advertising for bids because it would be "impractical to advertise for formal bids because of the difficulty and cost of defining in sufficient detail the facilities required by a purchaser." But, he added at that time, before negotiations started with any company, all US companies would be canvassed to determine those interested in purchasing the facilities.

Mr. Campbell disagrees regarding the advertising for bids. He asked that the property to be sold be appraised prior to the sale to provide a complete inventory for formal advertisement. He said this would put the "coalition of small companies" interested in buying the Alaska facilities on an equal basis with three larger companies which, he understands, are interested in bidding on the property. (It has been reported that a group of small Independent companies headquartered in New York state has indicated an interest in making a purchase of the Alaska facilities.)

"Since small telephone companies appear to be interested in the disposal of the facilities, we suggest that the bill specifically provide that small telephone companies be afforded an opportunity to participate in the proposed sale of the system, whether through negotiation procedures or formal advertising," the Comptroller General stated.

Regarding the "piecemeal" sale of the communications facilities, Mr. Campbell stated that he finds "no basis to object to the language which would permit the piecemeal disposal of the facilities, if it be determined to be necessary in the national interest to separate the disposal of telephone facilities from the telegraph facilities."

"However," he added, "we believe that disposal of the facilities, if at all possible, should be on an 'all or none' basis to avoid the enforced retention by the government of unprofitable facilities."

BDSA Predicts Gain of 3,933,000 Phones for '59

WITH THE net installation of telephones having resumed its upward trend, an increase of 3,933,000 throughout the United States during 1959 is expected, the Business & Defense Services Administration, US Department of Commerce has predicted in a review of developments in the operating telephone industry.

The expected gain for this year would bring the number of telephones in service in the United States to 70,563,000 by the end of 1959 and amount to a percentage gain of 5.9% over 1958, during which the net gain was 3,009,000 telephones, or 4.7% over 1957.

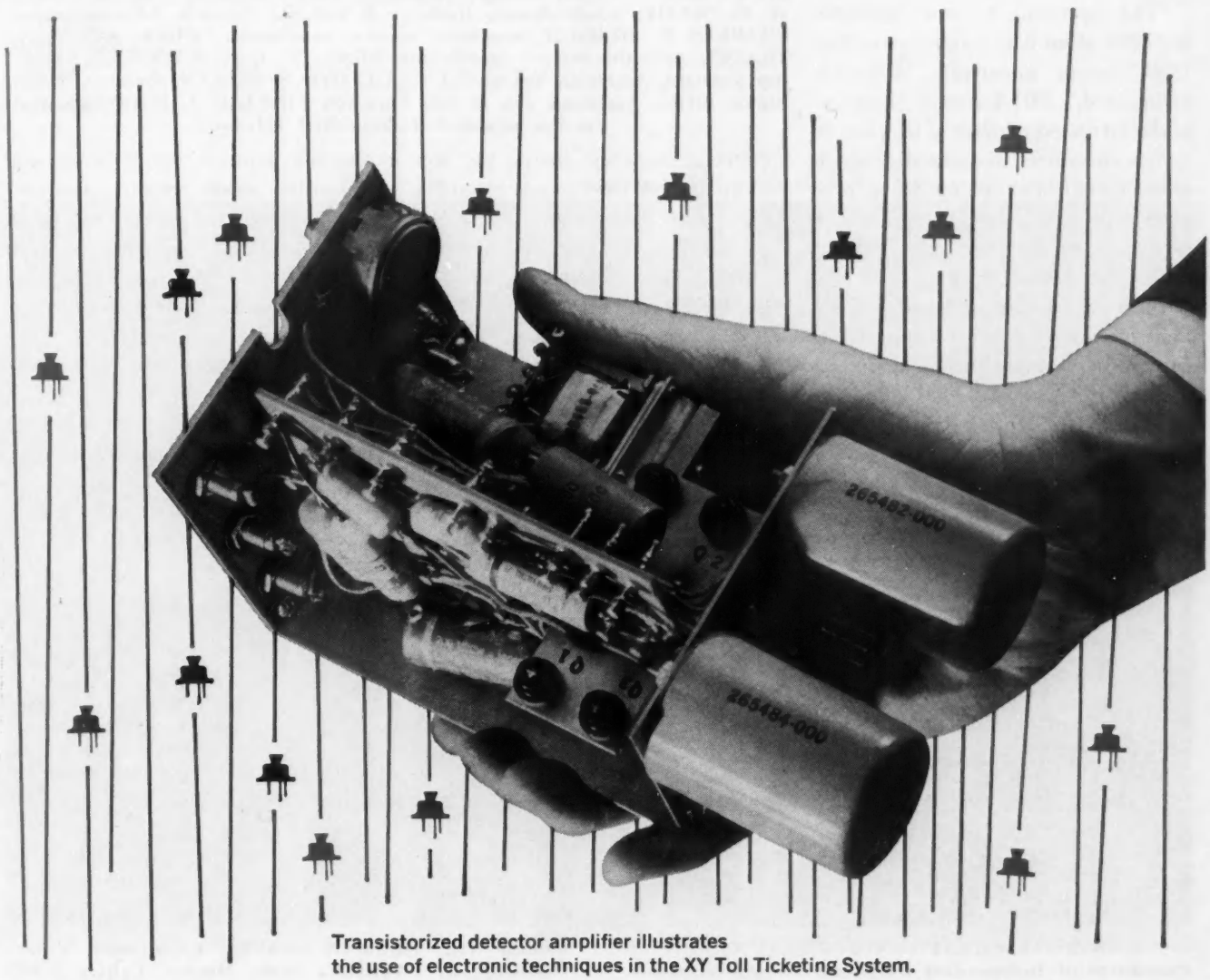
At the end of 1958, it was anticipated that the net station gain this year would be 3,191,222, but the gain during the first half of the year

XY® TOLL TICKETING*...

uses modern electronics...

In Stromberg-Carlson Toll Ticketing System, modern electronic principles and techniques are used to the fullest. The result: high speed, high reliability, low maintenance cost. **Get the extra revenue of DDD now–with XY Toll Ticketing.**

Contact your Stromberg-Carlson representative.



Transistorized detector amplifier illustrates the use of electronic techniques in the XY Toll Ticketing System.

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has resulted in a sharp upward revision in the estimate. At the same time, toll calls this year have been 14-15% higher than in 1958.

BDSA also reported that estimated expenditures for new plant and equipment of $2,700,000,000 in 1958 by the communications industry were not realized, the final figure falling short by $166,000,000. The total was $400,000,000 less than in 1957. The new plant and equipment estimate for 1959, based on actual capital expenditures for the first quarter, amounts to $2,470,000,000, but the trend during April and May indicates that these figures may rise to about $2,600,000,000.

"The operating revenue estimate for 1959 of an 8% increase over the 1958 figures apparently is being maintained," BDSA stated. "Because of the increased number of telephones in use and direct distance dialing, it seems certain that the operating revenue will meet the $8,350,000,000 estimated for the year 1959."

On the manufacturing side, the government agency declares that although sales of the communications equipment manufacturing industry for the first quarter of 1959 were slightly lower than for the first quarter of last year, the industry expects sales for the remainder of 1959 to exceed 1958 volume by 10% and thus approach the 1957 level.

Present at BSDA ceremonies honoring W. Elmer Pothen were (l. to r.): J. G. BONNAR, assistant director, Communications Industries Division, BDSA; ALEXANDER J. FALK, director, Communications Industries Division, BDSA; H. B. McCOY, administrator, Business & Defense Services Administration; CHARLES B. HERSUM, executive reserve coordinator, BDSA; LOUIS A. TRAXEL, executive reserve coordinator, BDSA; W. ELMER POTHEN, executive assistant, American Tel. & Tel. Co.; LLOYD S. MILLER, director, Washington office, American Tel. & Tel. Co.; and EDWARD J. FORD, assistant to the president, Indiana Bell Tel. Co.

"Strong recovery during the second quarter of 1959 points toward a bigger year than seemed likely last December, and a general expansion is taking place in the industry to meet 1960 requirements," the report stated. "Employment has already increased by more than 6000 employes during the first half of 1959, and in the same period building construction added about 2,000,000 square feet of floor space.

"An upward trend is expected in 1959 because of anticipated strong consumer demand, rising investment in capital goods, record construction outlays, and other favorable factors," BDSA commented. "It is assured that for the year more than 4,000,000 square feet of floor space will be added, representing a gross capital investment of over $200,000,000."

According to the report, sales of the industry in 1959 are expected to be larger than anticipated at the beginning of the year, and should reach about $2,650,000,000.

1960 MANAGEMENT DEVELOPMENT CLASS

Executives of Independent telephone companies attending recent USITA Management Development Program at the University of Kansas were photographed during meeting held in the Kansas Room. First row, seated (l. to r.): BERLIN JOHNSON, Charlottesville, Va.; WAYNE A. JOHNSON, Everett, Wash.; E. D. WILKINSON, Tallahassee, Fla.; STEWART W. PHILLIPS, Erie, Pa.; JACK A. GROSSMAN, Rochester, N. Y.; MARVIN E. WINANS, Everett, Wash., and JOHN J. CLARKE, Monrovia, Calif. Second row, standing (l. to r.): DEWEY H. F. WONG, Honolulu, Hawaii; DUSTY KEMPER, Brownfield, Texas; CHRIS B. HANSEN, Elkhart, Ind.; B. F. STALTER, Plymouth, Wis.; HERMAN GRAVES, Brownwood, Texas; HODGEN O. PATRICK, Santa Monica, Calif.; JOHN LOUIS RUNKLE, Hickory, N. C.; RUSSELL LOGUE, Casey, Ill., and KENNETH A. YOUNG, Fort Dodge, Ia. Third row, standing (l. to r.): JOHN H. McHENRY, Jefferson City, Mo.; BENJAMIN KAUAHIKAUA, Honolulu, Hawaii; DICK F. PERLEY, Des Plaines, Ill.; FLOYD L. REYHER, Haxtun, Colo.; CHARLES P. LAMM, Charlottesville, Va.; ALLAN E. LINDEKUGEL, Fairmont, Minn.; C. FREDERICK ROTH, American Tel. & Tel. Co., New York, N. Y.; JOHN D. COOPER, Rochester, N. Y., and RICHARD LASHLEY, University of Kansas.

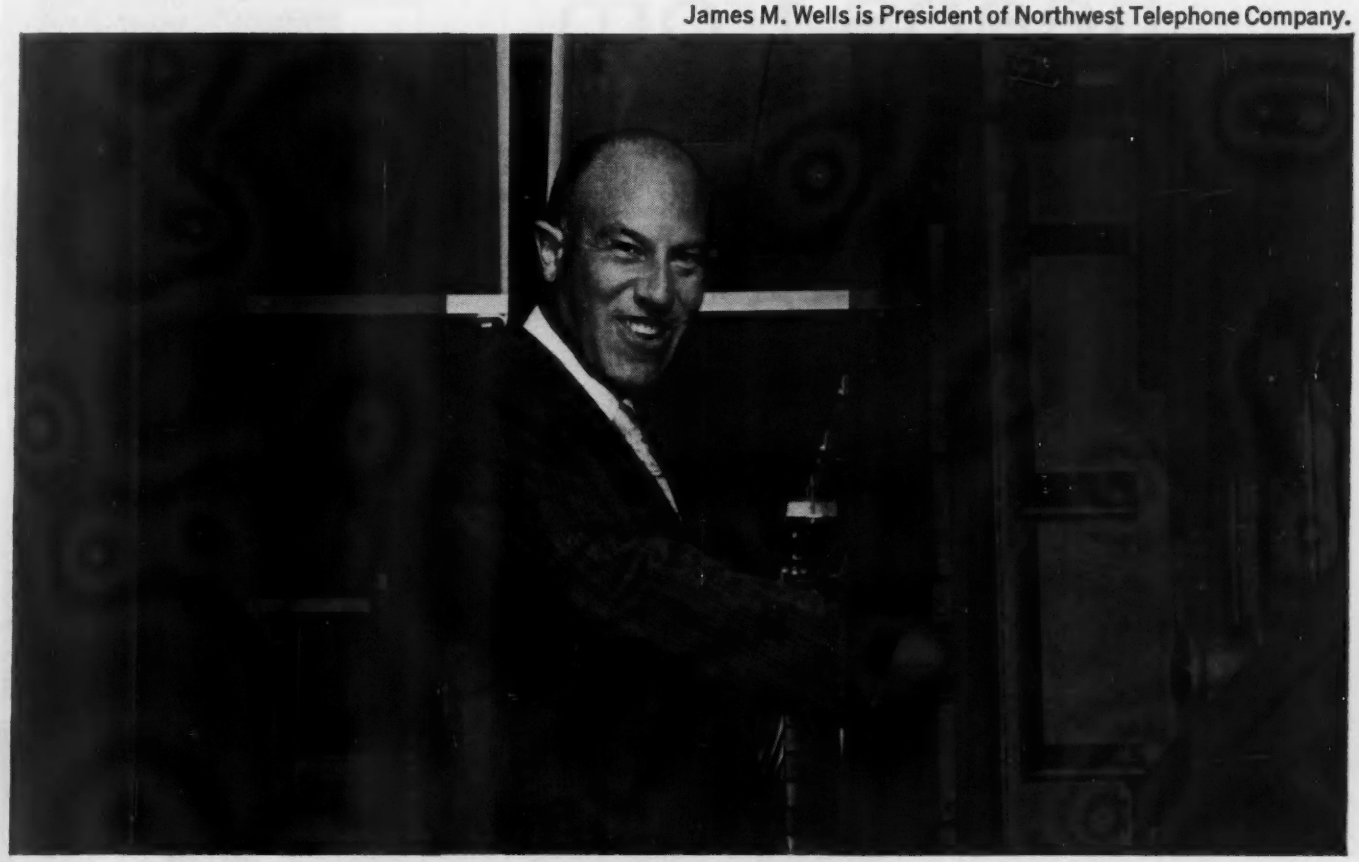
(See complete story on page 54.)

XY® TOLL TICKETING*...

proven extra revenue producer...

Since installing Stromberg-Carlson Toll Ticketing equipment, the Redmond exchange of Northwest Telephone Company has enjoyed a 28% increase in toll revenue! You, too, can get the extra revenue of DDD now—with XY Toll Ticketing. Ask your Stromberg-Carlson representative.

James M. Wells is President of Northwest Telephone Company.



*Complete Toll Accounting.

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A DIVISION OF **GENERAL DYNAMICS CORPORATION**

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All your communications needs from one dependable source

AE-Lenkurt offers <u>everything</u> you need to plan profitable circuit expansion every step of the way

Whatever *your* growth problems may be, AE-Lenkurt can help you solve them. Here's why:

From one dependable source you get *complete* planning, engineering and installation service that relieves you of all short-range and long-range circuit expansion details. These services are backed by experienced *telephone* engineers who know and understand the capabilities of your present equipment.

Our engineers evaluate your requirements – recommend the type of equipment that will meet circuit conditions most efficiently and economically over the years. You can "add as you go," the building-block way, with full assurance that the units you install today will work into and out of the units you add tomorrow.

Whether your expansion needs call for wire, cable, carrier or microwave, we have it—together with all other telephone equipment and supplies. Anything you want, you can get—from one central, dependable source.

Want more facts? Call your Automatic Electric representative – or mail coupon today.

Automatic Electric Sales Corporation,
Northlake, Illinois
Attention: Mr. T. B. Collins, Manager

Please send literature on:

- ☐ Lenkurt Carrier
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AUTOMATIC ELECTRIC

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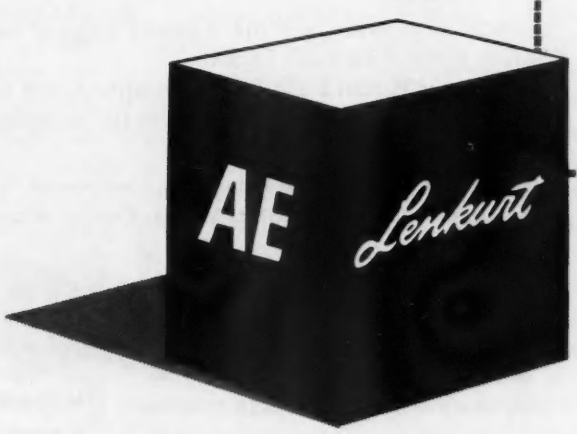
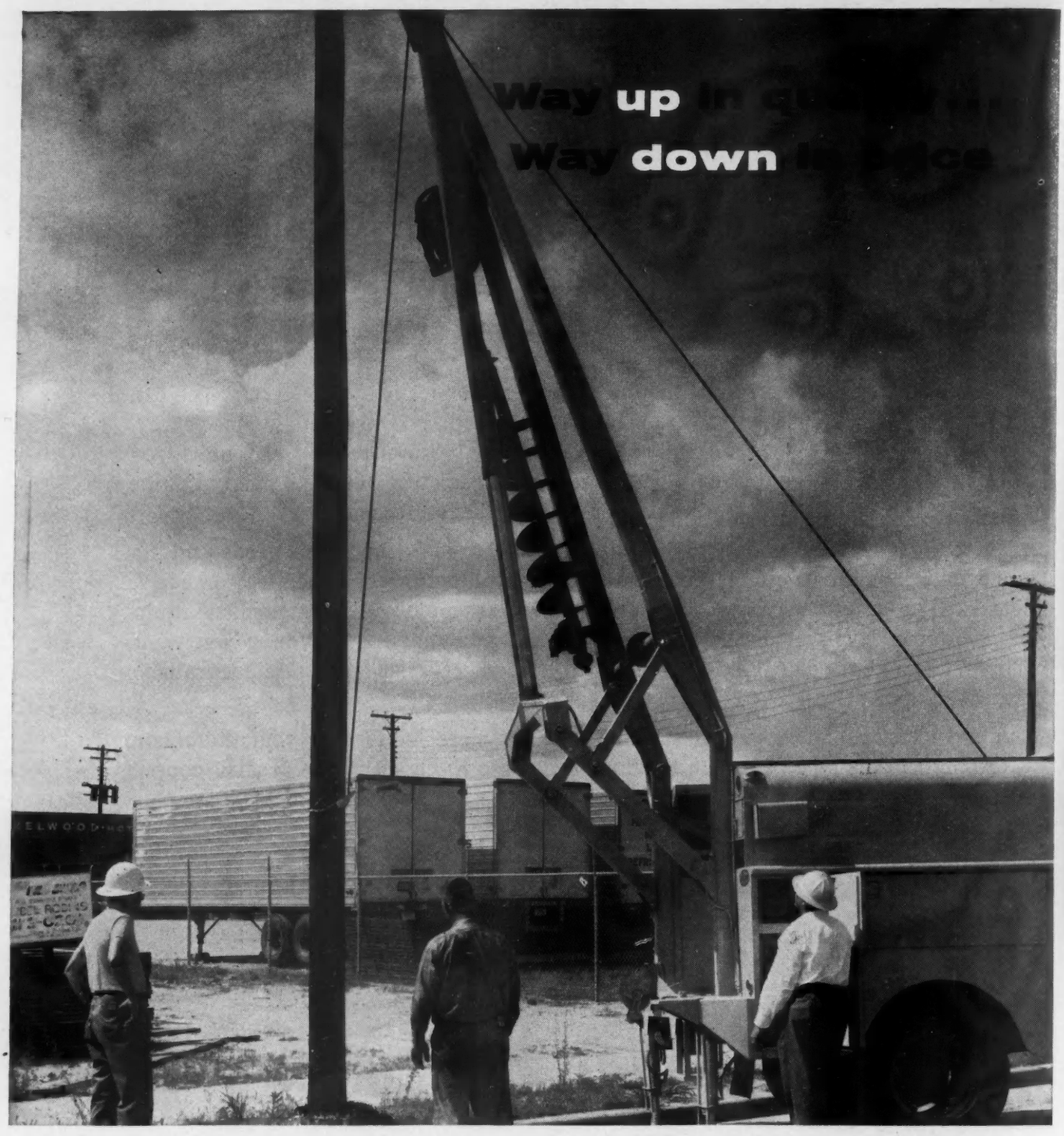
GENERAL SYSTEM





Holan's Single-Cylinder, Three-Legged Derrick Lifts 8,000 Pounds

Three-legged ruggedness, single-lever control, 8,000 pounds of lifting power . . . are all found in the new Holan Series 11000 Derrick.

Simplicity is the secret . . . simplicity of design. It lowers the cost without lowering the quality.

Boot strap linkage makes it possible to power the Series 11000 with one powerful hydraulic cylinder. Rectangular side legs, fabricated from high tensile steel, cut weight without sacrificing strength.

Here's a derrick that handles 8,000 pounds . . . sets 60-foot poles . . . body loads 2,000 pounds . . . and lowers to within two feet of the ground.

Also shown mounted on the Holan high tensile construction body are the 4401-H Digger and Series 5095 Hydraulic Jacks.

Ask your Holan Field Representative about the Series 11000 Derrick . . . or write for complete details.

Holan Corporation, 4100 West 150th Street, Cleveland 35, Ohio
Plants in Cleveland, Ohio; Griffin, Georgia; Phoenix, Arizona

Holan

Subsidiary of THE OHIO BRASS COMPANY

HOLAN

When the Elyria, Ohio, Telephone Co. expanded its underground system to continue its program of long-distance direct dialing, Anaconda Stalpeth did the job. And did it quicker, more easily and at less cost than ordinary paper-lead cable.

ANACONDA STALPETH THE LIGHT-WEIGHT PAPER-INSULATED TELEPHONE CABLE THAT'S A "HEAVYWEIGHT" IN SAVINGS AND PERFORMANCE!

Lower initial costs . . . lower shipping costs . . . lower installation costs . . . lower maintenance costs—you get them all with Anaconda Stalpeth, the paper-insulated telephone cable that's 30% to 50% lighter than ordinary paper-lead cable!

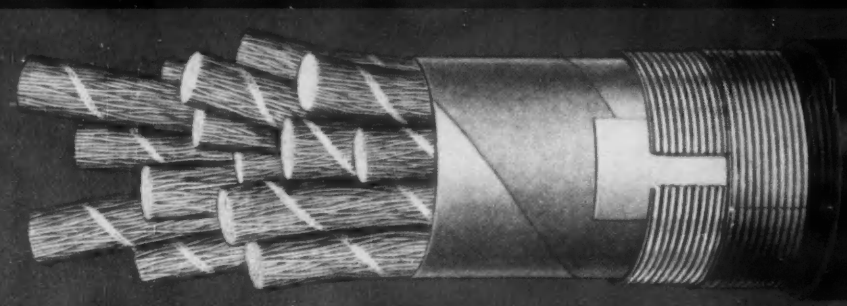
Anaconda Stalpeth comes by its money-saving light weight because its sheath is made of STeel, ALuminum and PolyETHylene. The result is a cable that offers new economy, new ease of handling. It permits longer pulls through ducts and quicker aerial installation.

Once installed, Anaconda Stalpeth turns in steady, dependable performance—thanks to the outstanding electrical and mechanical properties built into it at the factory. Anaconda's rigorous quality-control setup is a double-check: each conductor is individually inspected as it comes out of the insulating machine, and every pair is tested. Thorough in-process control eliminates need for costly, time-consuming field inspection.

In addition there are other important advantages: (1) Anaconda Stalpeth's polyethylene jacket offers electrical protection from falling power lines. Prevents power faults which could damage lead-sheathed cable. (2) Its high-molecular-weight polyethylene jacket prevents corrosion problems often encountered in ducts. (3) The electrical characteristics of Anaconda Stalpeth have been engineered to the high standards of all Anaconda cable: minimum conductor resistance . . . high insulation resistance . . . maximum dielectric strength . . . low-resistance shield—traditional paper quality with new economic light-weight sheath.

Consider this modern, light-weight, economical cable for your telephone needs. Behind its manufacture stands Anaconda's 50 years of experience in the production of paper-insulated cables, the latest in manufacturing equipment and testing devices. Distribution points across the country mean fast delivery and service. Anaconda Wire & Cable Co., 25 Broadway, New York 4, New York.

For further facts on Anaconda Stalpeth see other side . . .

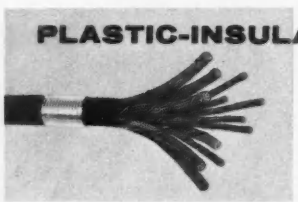


STALPETH CONSTRUCTION. *Insulation:* Single-wrap paper tape applied with an overlap. *Color Coding and Assembly:* Coded by standard color groups in all constructions. Layer construction 51, 76 and 101 pairs; unit construction 76, 101, 152, 202, 303, 404, 606, 909, 1212, 1515, 1818 and 2121 pairs. For 19 Awg and 22 Awg–insulated conductors are twisted into pairs having 10 different pair twists; for 24 Awg and 26 Awg–they are twisted into pairs having 5 different pair twists. The pairs are stranded into units. The units are assembled as shown. Cable core is covered by two thicknesses of paper tape. *Sheath:* Anaconda Stalpeth sheath is composed of aluminum tape, coated-steel tape and a high-molecular-weight polyethylene jacket overall. The inner .008-inch aluminum tape is applied longitudinally with a slight gap, corrugated for flexibility in large diameter cables. The low d-c resistance of this tape when properly grounded limits the effect of induction from power lines and reduces possibility of damage to cable from lightning. The outer .0072-inch corrugated coated-steel tape is also applied longitudinally, but with an overlap, and is soldered to form a tight metallic seal. It provides maximum protection to the cable core against possible moisture diffusion through the outer polyethylene jacket. The outer jacket is composed of high-molecular-weight polyethylene which is highly resistant to abrasion, weathering, moisture, corrosion, and environmental cracking. *Shipment:* Each length is wound on a separate reel, with each end sealed to prevent entrance of moisture. Each reel is fully lagged. 59247

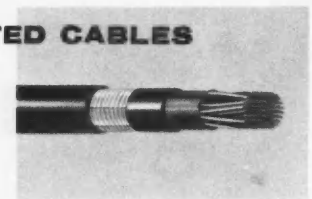
TEAR OUT FOR YOUR FILE

IN ADDITION TO STALPETH, ANACONDA MANUFACTURES THIS FULL LINE OF SUPERIOR TELEPHONE CABLES

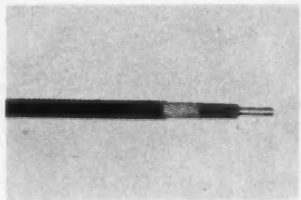
PLASTIC-INSULATED CABLES



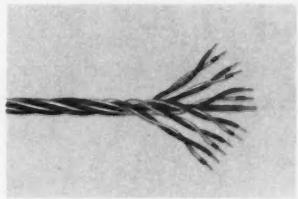
Anaconda Alpeth Type ALP Aerial & Duct Cable (No. 19, 22 & 24 Awg). Polyethylene insulated; full color code; 8-mil longitudinal aluminum shield; high-molecular weight polyethylene jacket.



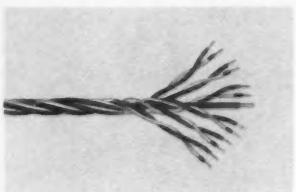
Anaconda Type PCP Direct-Burial Cable (No. 19, 22 & 24 Awg). Polyethylene insulated; full color code; polyethylene belt; 5-mil longitudinal copper shield; polyethylene jacket.



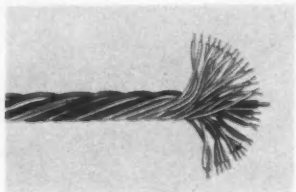
Anaconda Type BW Buried Distribution Wire (No. 19 & 16 Awg). Two conductors, parallel; insulated with polyethylene; oval in shape; flat-steel wire serving, asphalt coating, Densheath* jacket.



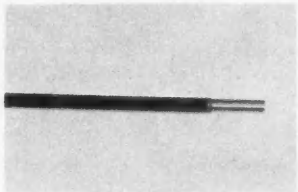
Anaconda Type RD Rural Distribution Wire (No. 19 Awg). Conductors insulated with polyethylene, jacketed with color-coded Densheath; pairs assembled around polyethylene-covered support wire.



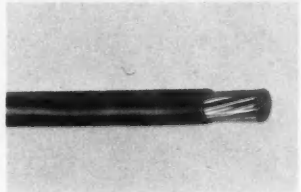
Anaconda Type SD Suburban Distribution Wire (No. 22 Awg). Conductors insulated with polyethylene, jacketed with color-coded Densheath; pairs assembled around polyethylene-covered support wire.



Anaconda Type UD Urban Distribution Wire (No. 24 Awg). Densheath-insulated conductors; color-coded pairs assembled around polyethylene-covered support wire.

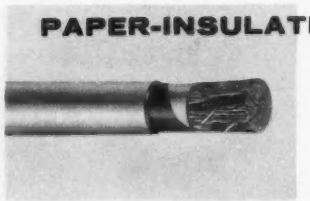


Anaconda Type CR Single Pair Parallel Distribution Wire (No. 14 Awg & .080" Copperweld). Two conductors parallel; insulated with high-molecular weight polyethylene, oval in shape.

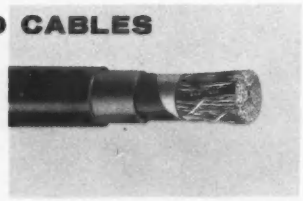


Anaconda Type IC Inside Telephone Cable (No. 22 & 24 Awg). Densheath-insulated inside telephone cable; nonfading color-coded pairs with corrosion-resistant Densheath jacket overall.

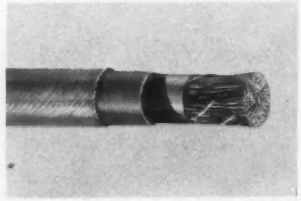
PAPER-INSULATED CABLES



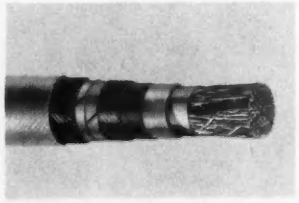
Anaconda Type PL Paper-Lead Cable (No. 19, 22, 24 & 26 Awg). Single-paper-tape insulated telephone cable, paper core covering over assembled pairs; antimony-lead sheath overall.



Anaconda Type PLP Paper-Lead Polyethylene Protected Cable (No. 19, 22, 24 & 26 Awg). Paper insulated, paper core covering, assembled pairs; antimony-lead sheath, polyethylene jacket.



Anaconda Type PLJ Paper-Lead, Jute-Protected Cable (No. 19, 22, 24 & 26 Awg). Single-paper-tape insulated, paper core covering over assembled pairs; antimony-lead sheath; jute serving overall.

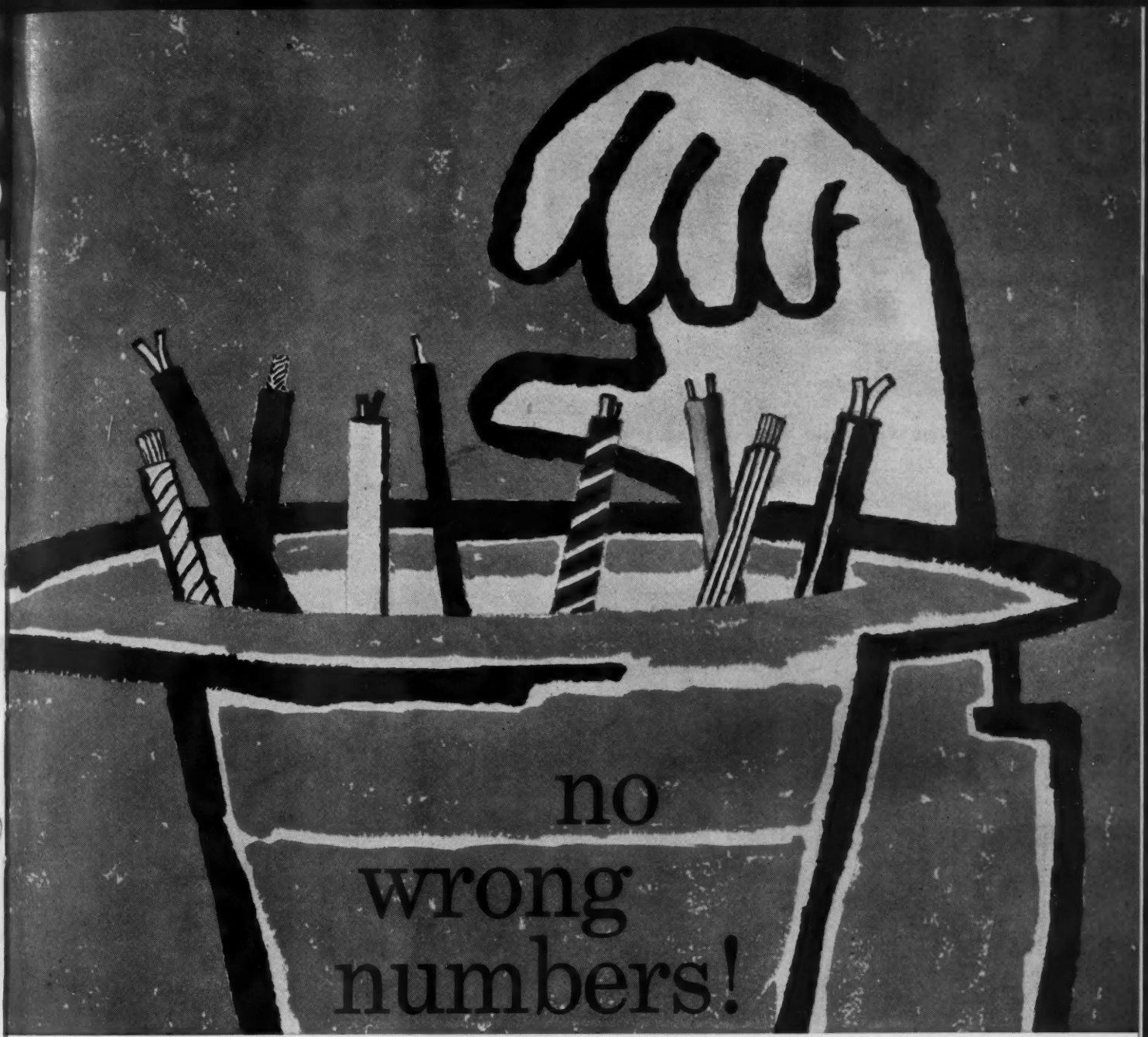


Anaconda Type PLBT Paper-Lead, Tape-Armored Cable (No. 19, 22, 24 & 26 Awg). Paper insulated; antimony-lead sheath; impregnated-paper tape; jute; flat-steel tapes; nonadhesive coating.

PHONE THE MAN FROM **ANACONDA®** FOR TELEPHONE CABLE

*Reg. U. S. Pat. Off.

the independent manufacturer for the independent telephone industry



TEAR OUT FOR YOUR FILE

MONSANTO POLYETHYLENE formulations are based on long experience in supplying the specialized needs of the Wire and Cable Industry. That's why you can always count on a correct answer to your specific insulation problem, when you call Monsanto Chemical Company, Plastics Division, Springfield 2, Massachusetts.

*OPALON: REG. U.S. PAT. OFF.

Monsanto

MPE 10 medium molecular weight natural, with non-discoloring antioxidant; primary insulation for telephone cable, power cable, control cable, and general insulation use.

11302 medium molecular weight black, with non-discoloring antioxident; for line and drop wire insulation, weather-resistant primary and support wire insulation, general purpose jacketing.

12203 high molecular weight natural, with non-discoloring antioxidant; primary insulation for telephone, power, and control cable; insulation requiring superior toughness, maximum stress crack resistance.

12253 medium molecular weight natural, with non-discoloring antioxidant; for primary insulation for coaxial cable, power cable, telephone cable, and general insulation use.

14202 high molecular weight black, with non-discoloring antioxidant; telephone and power cable jacketing; all jacketing and insulating applications requiring maximum stress crack and weather resistance.

Monsanto has also developed a complete line of Opalon* Vinyl compounds for wire and cable insulation.

Are you receiving your monthly "WIRE RECORDER"? Use coupon to get this useful news bulletin published by Monsanto.

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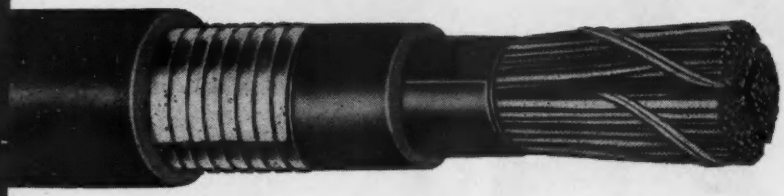

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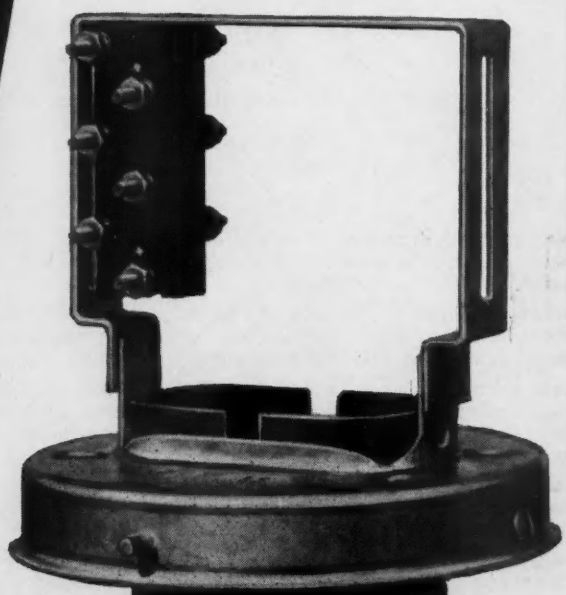
ARMORED UNDERGROUND DISTRIBUTING WIRE

AE offers you

CABLE AND

for your



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PROMPT DELIVERY
LARGE STOCKS
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Subsidiary of
GENERAL TELEPHONE & ELECTRONICS

POWER-INSTALLED SCREW ANCHORS

average 5 to 8 man-minutes for complete installation

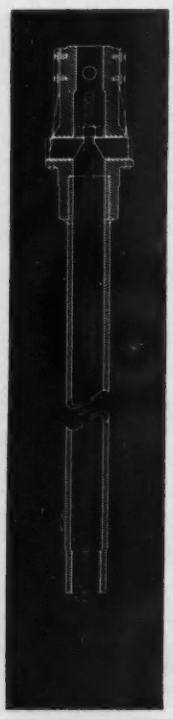
Latest advance in anchoring technique speeds line construction . . . realizes greater value from investment in hole-boring equipment

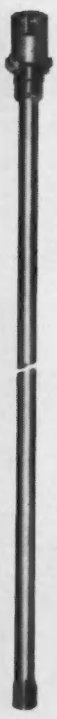
If your company uses power hole-digging equipment for line construction, you can now use that equipment to install the new line of Chance Screw Anchors.

Chance Power-Installed Screw Anchors, ranging from 78 to 176 square inches in area, can be speedily installed in all types of soil, except extremely rocky soil. Your present power boring equipment, regardless of type, can be easily adapted to power anchor installation. Only one new part is needed—the wrench shown below. This wrench transmits torque from the power equipment directly to the specially designed hub on the anchor helix. Since the anchor rod is not subjected to torque, it only has to be heavy enough to support the guy load—a cost-saving factor.

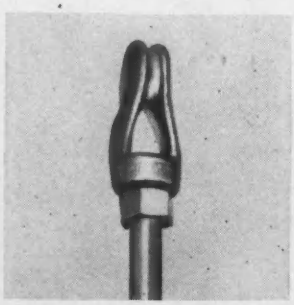
Installation procedure is extremely simple. *Step one* is to remove the Thimbleye or Twineye nut and slide wrench on the anchor. *Step two* is to fasten the wrench to the "Kelly Bar" of the power-digger, or, to fasten the wrench on the pilot bit of the auger using an adapter. *Step three* is to drive the anchor with the power equipment. *Step four* is to release the wrench from the anchor and retrieve it from the ground. (The spring-loaded "dogs" that lock rod in position are easy to release.) *Step five* is simply replacing the Thimbleye on the end of the rod—your anchor is ready for hooking up the guy wire.

These five steps are accomplished in a matter of minutes. Repeated time tests in various types of soil prove that Power-Installed Screw Anchors averaged only 5 to 8 man-minutes for a complete installation *—from the time the equipment was moved into position until the anchor was ready for the guy!*

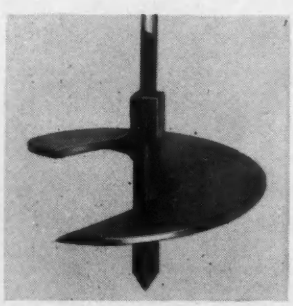




THE ONLY PART NEEDED is this special wrench. (Diagram shows how it fits the anchor.) Wrenches are made to fit all popular makes of earth-borers.



THIMBLEYE and TWINEYE guy-wire nuts are available. They distribute pulling stresses uniformly and keep guy wire from spreading, kinking, or bending.



SHARP CUTTING HELIX of high strength structural steel is tapered to minimize earth disturbance. Special hub fits lower part of wrench.

CA59-23A

PULL TESTS PROVE HOLDING POWER

During the engineering and development stages of these Power-Installed Anchors, several hundred tests were made to check the anchoring dependability of power-installed screw anchors. Each anchor was pulled by a mobile testing unit to determine maximum holding power. Complete test data is given in Bulletin 868. Address your Bulletin requests to...

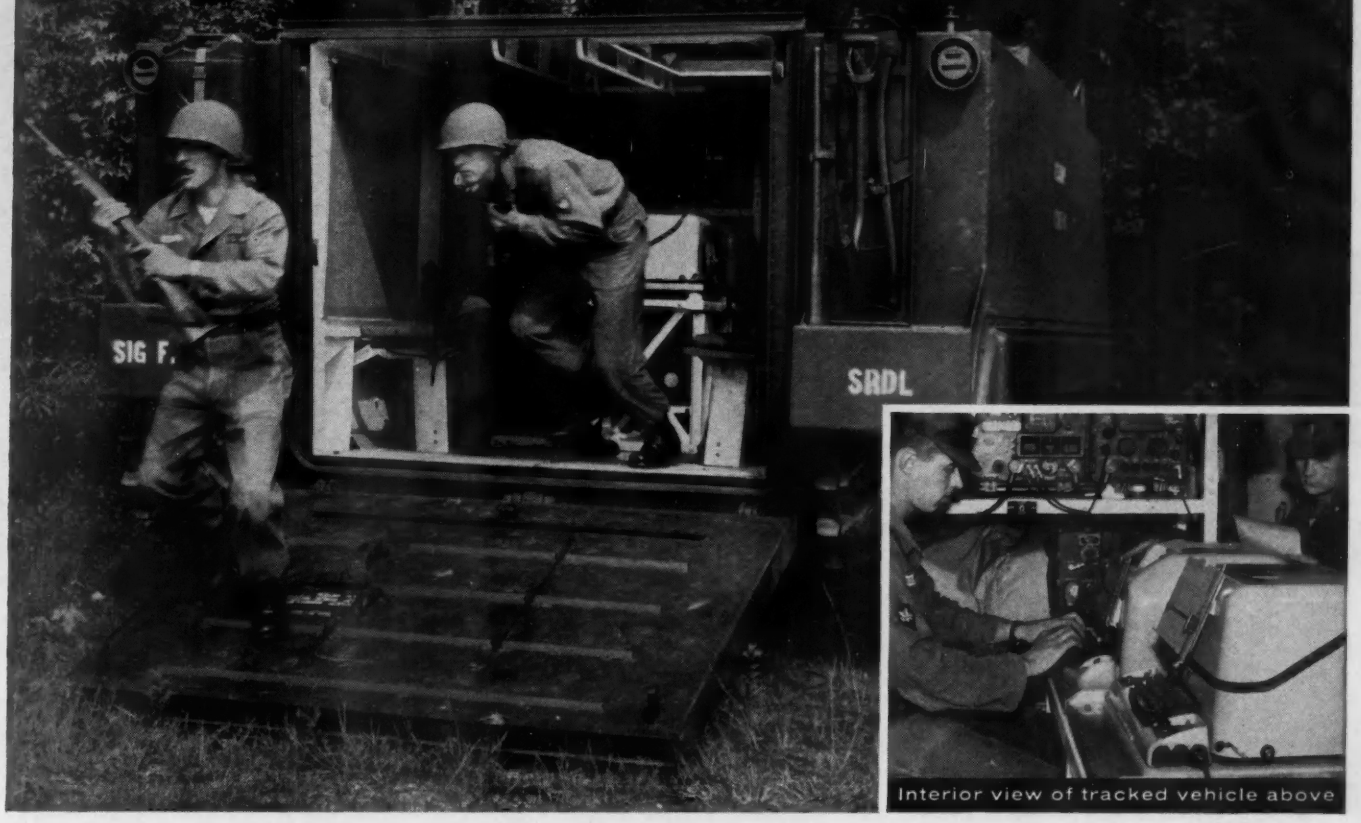
A. B. CHANCE CO.

CENTRALIA, MISSOURI

A. B. Chance Co. of Canada, Ltd., Toronto

COMBAT MOBILITY

telecommunications move up-front with the advance



Interior view of tracked vehicle above

Kleinschmidt teletypewriters maintain constant contact, in print, between U. S. Army command and field positions

On the go...bouncing over bunker or beachhead ...Kleinschmidt teletypewriters accurately, efficiently send and receive printed messages. Developed in cooperation with the U. S. Army Signal Corps, these units instantly provide both sender and receiver with identical data...*printed on paper!* In recognition of its quality, Kleinschmidt equipment is manufactured for the U. S. Army under the Reduced Inspection Quality Assurance Plan. This kind of proved experience is now available for unlimited advances in electronic communications for business and industry.

KLEINSCHMIDT

DIVISION OF SMITH-CORONA MARCHANT INC., DEERFIELD, ILLINOIS

Pioneer in teleprinted communications systems and equipment since 1911

NEW!
LEICH
Subsidiary of GENERAL TELEPHONE & ELECTRONI
GENERAL SYSTEM

NEW!

Leich's L55 Floor-type PBX

Here's the switchboard that increases your PBX sales, and saves you money, too. Leich's L55 PBX is not only attractive, durable, and easy-to-operate, but also reduces your maintenance and expansion costs. What's more, it gives your larger subscribers all the service features that they most desire.

Formica-type Cabinets

Leich's formica-type cabinets are non-flammable and stain-resistant. They're available in standard finishes of mahogany, walnut, and blond ash to complement your subscribers' furnishings. An unfinished bay poplar plywood cabinet is available on request.

Unique Keyboard Arrangement

A simplified keyboard arrangement lets the operator handle calls easily, and gives her more room to perform other office duties. Both push-button ringing keys and twist-push type talk keys are conveniently located in a sloping position above the writing shelf. Talk keys serve as night answering keys by simply pushing them in.

Jack-in Circuits

Jack-in cord circuits, operator's circuit, and central office trunks let you add, remove or service equipment quickly and economically. Leich's new cord circuits also allow for maximum range. There's less need for long line relay equipment at the PBX to handle off-premises extensions.

Two Sizes Available from Stock

Two basic models, the L55-A3 and L55-B4, are available from stock, and can be delivered within 30 days. Additional lines, trunks and cords may be ordered up to capacity, plus other service features, such as conference and tie trunks.

MODEL L55-A3			MODEL L55-B4	
Wired	Equipped		Wired	Equipped
60	30	Station Lines	80*	40
14	6	C. O. Trunks	14	8
15	8	Cords	15	10
1	1	Operator's Circuit	1	1

*Capacity: 120 lines.

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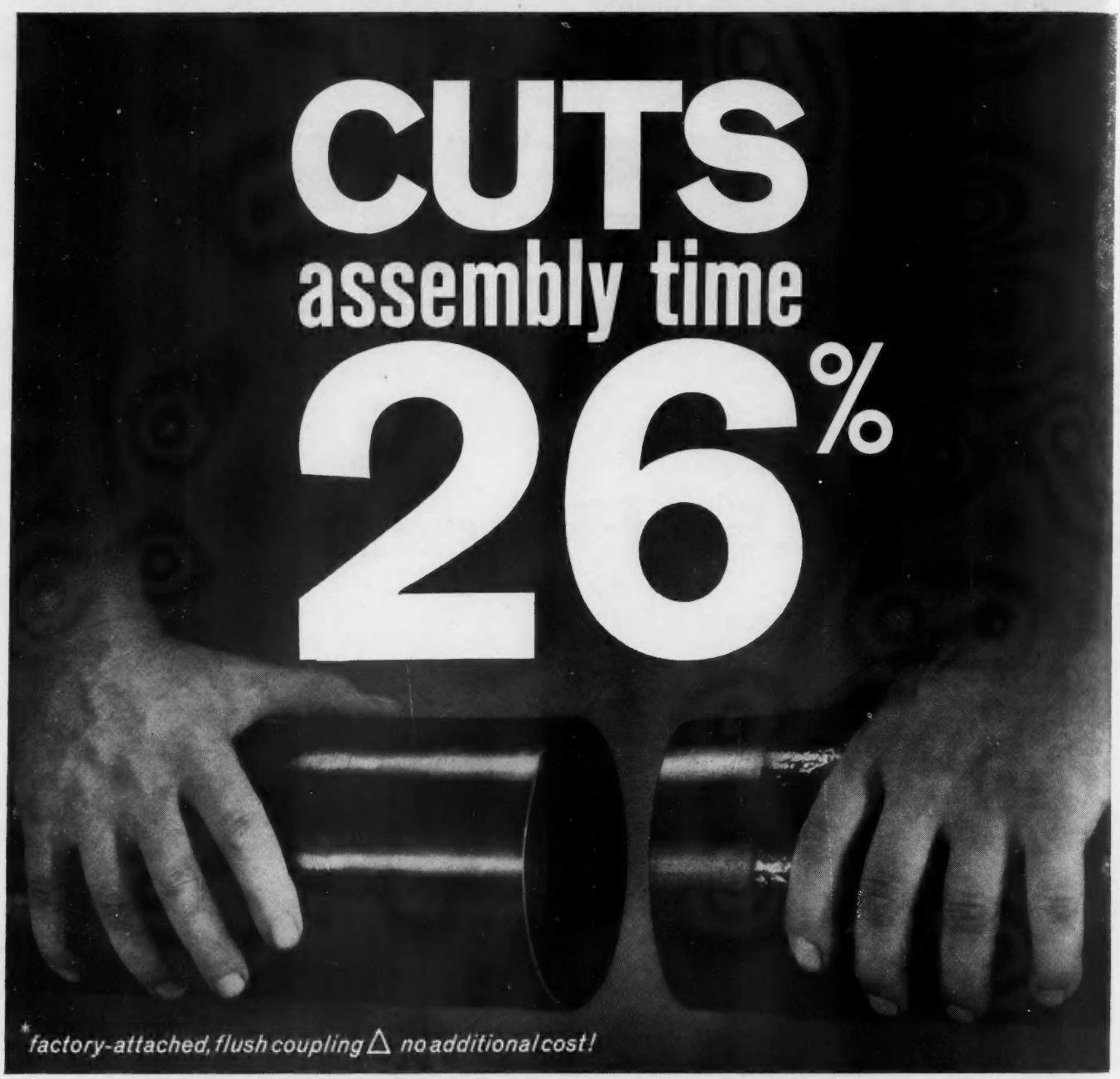
manufacturers of telephones, switchboards and related apparatus since 1907



New ORANGEBURG® CA* CONDUIT *with Flush Coupling Attached!*

With no separate couplings to handle or attach on the job, Orangeburg CA lays faster, costs less to install. Each long, light length has a *flush* coupling attached at one end and a standard 2° male taper at the other end, making installation a simple, one-step operation. And, since the coupling *is* attached, there are no coupling cartons to warehouse or carry to the job.

What's more, with the coupling *flush* to the conduit's outside wall, new CA is easy to stack, store and handle. The flush coupling also eliminates "staggered" joints in the trench. And that means real savings in cutting and tooling time.

Like the hundreds of millions of feet of Orangeburg fibre conduit in use since 1893, new CA has self-sealing joints and impermeable walls. Its smooth, 100% fibre raceway adds years to cable life.

New Orangeburg CA is available in 2", 3", 4", 4½" and 5" sizes. Orangeburg Standard and Nocrete Conduit, with separate sleeve couplings, are available as always. Write Dept. TE-99 for Catalog 52.

ORANGEBURG MANUFACTURING CO.
Orangeburg, New York • Newark, California
A Division of The Flintkote Company, Manufacturers of America's Broadest Line of Building Products

Orangeburg Fibre Conduit is distributed by Graybar Electric Co. and General Electric Supply Co. with branches and stocks in principal cities.

EDITORIAL

"An Important Day At Lawerence"

JUST A fortnight ago, on August 7 to be exact, the President of the United States Independent Telephone Association, Hugh A. Barnhart, left his home base at the Rochester (Ind.) Telephone Company, journeyed to Lawrence, Kansas, and delivered the principal address at ceremonies honoring participants in USITA's 1959 Management Development Program.

It was an important occasion for Mr. Barnhart, members of the USITA Personnel Committee, faculty members of the School of Business at Kansas University, the Independent telephone men who had successfully completed the intensive, concentrated four-week course — *and it was an important occasion for the entire telephone industry.*

There are many reasons for our placing the emphasis of the preceding paragraph on its concluding words — "*important occasion for the entire telephone industry.*"

The main reasons were summarized by USITA President Barnhart in his commencement address when he stated — "*Education is an ever-continuing process. What you men have learned during your weeks of classes, lectures, studies and association is bound to influence your future and the future of many Independent telephone companies as well.*

"*In the years which lie ahead, you men who are graduating from this Management Development Program will be moving on to greater and greater responsibilities . . . With people changing, management changing, technology changing and service changing, it would be unforgiveable not to use every means in our power to improve our competence and at the same time our understanding of the world around us and our place in it. . . .*"

We feel sure each member of USITA's Second Management Development Program was in firm agreement with Mr. Barnhart's statements. They, like the USITA president, long ago recognized that Management Development was, and is, *important not only to their individual futures but also of importance to the future of the telephone industry.*

The telephone men who recently received certificates denoting satisfactory completion of the USITA Management Development Program deserve and should receive the commendation of the entire telephone industry.

Although in total, the graduates represent only a small percent of the total number of telephone employes, we believe the telephone industry has been strengthened by these men who took time from their regular duties to learn how to do a more effective job in their current positions and to prepare for the more challenging responsibilities of tomorrow.

This yearly training of men in the fine points of Management Development is, we believe, one program the industry should never abandon. Also, we think it is one program in which more telephone companies should participate.

The basic objective of the program is to help telephone executives prepare themselves for effective managerial leadership. More specifically the program aims to help participants broaden their horizons with respect to their own jobs and with respect to the current and future positions of their companies.

Certainly, these objectives, aimed at broadening thinking and outlook, increasing present effectiveness, and stimulating interest in further self development make the USITA Management Development Program possess such tremendous possibilities to the telephone industry that it deserves increasing and continued support.

In the past such support has been given by several companies and the industry has already benefited from the increased managerial effectiveness of those who attended the 1958 sessions and will, we feel sure, benefit in a similar manner from the training given the participants in the 1959 class.

But 1960 is another year, and in 1960 USITA will conduct its 3rd Management Development Program. If you missed the first two sessions we believe you can take one big forward step by resolving now to be on hand when class is called to order for the 1960 session. We hope you'll be there.

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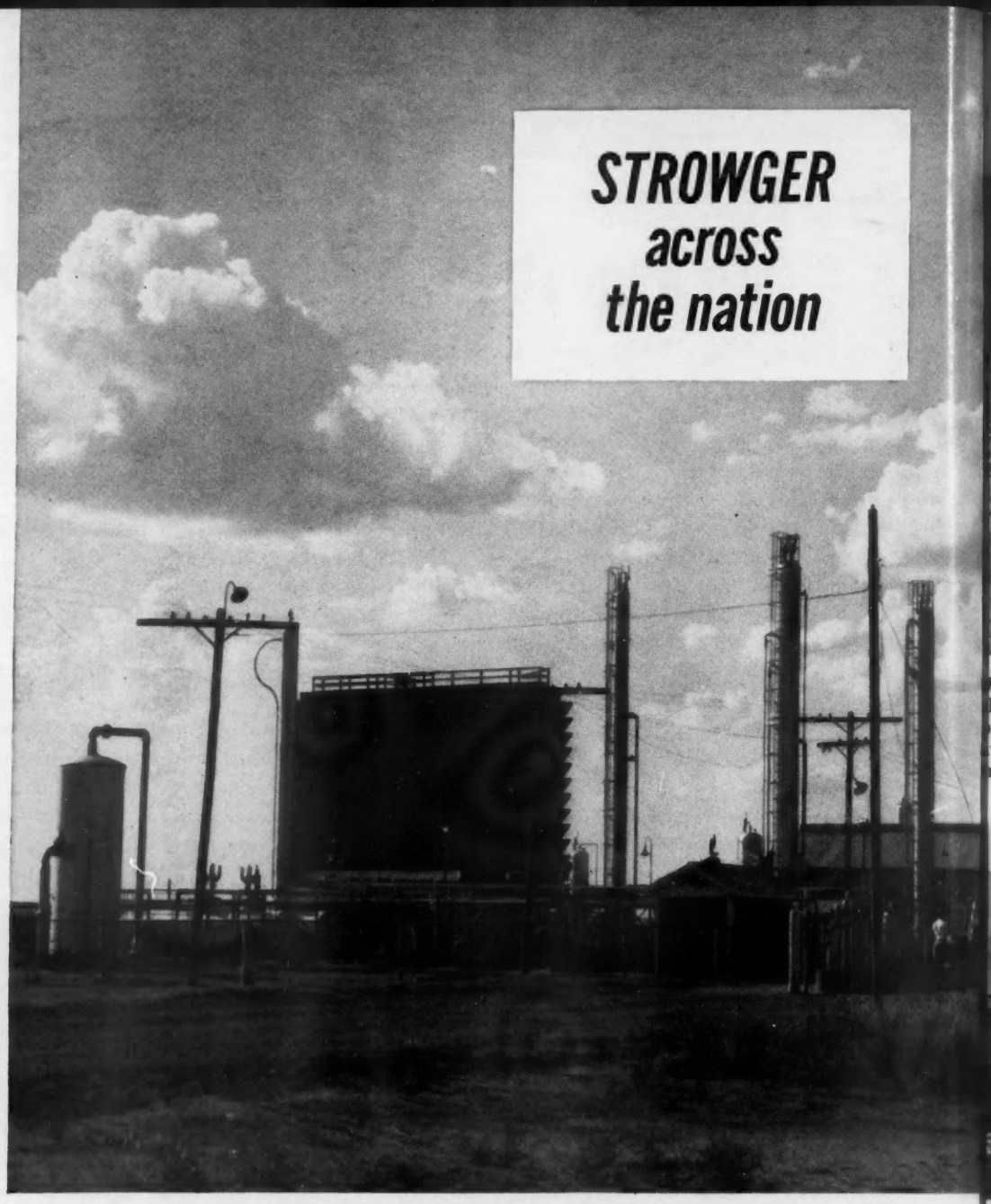


GASOLINE PLANT (one of many) processing natural gasses from Electra oil wells. All of the facilities for drilling, processing and transporting oil are in Electra. Scientific recovery programs are revitalizing old oil wells. And a continuing search for new sands has resulted in the opening of many new wells.

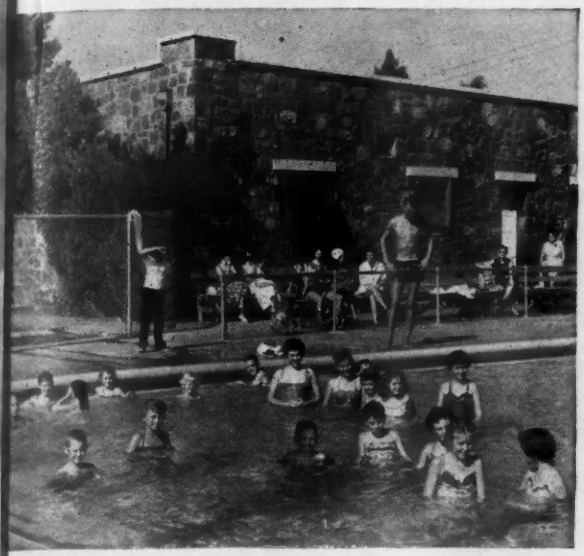
ELECTRA, TEXAS

An April Fool's Day gusher proves real and sets off a boom that turns a cowtown into the oil capital of Northwest Texas

Ten miles from the famed Red River, on the western edge of Wichita County, is Electra, Texas. Originally, Electra was a cowtown and trading post. On April 1, 1911, the day of a Trades Day celebration, word spread through town of an oil gusher. Many people, thinking it a promotional stunt for the celebration, yelled, "April Fool!" But it was no joke. The lone gusher touched off a boom that turned Electra into an oil center. In 1958, pipeline runs totaled 6,000 barrels daily.

Electra is also an agricultural center because of i location within the fertile Red River Valley. Whe farming and cattle raising are important sources income.

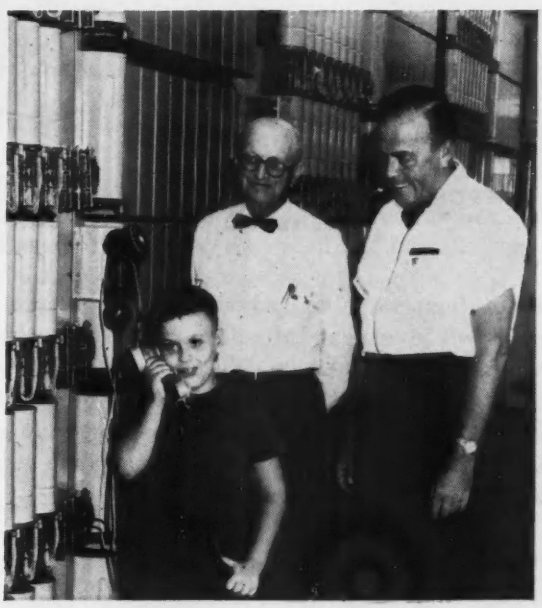
Electra is served by Electra Telephone Compan Each day, Automatic Electric step-by-step switch work behind the scenes to give dependable, low-co telephone service. Yes, Electra is another success sto of Strowger Across the Nation.



UNICIPAL SWIMMING POOL is one of the largest in his area. It is surrounded by a spacious park used for icnics, special events and sports. Other public facilities vailable to Electra's 6,500 population includes a coun- y club, community center and a modern hospital.

ELECTRA TELEPHONE COMPANY serves the people of Electra from this modern building. D. M. Robb, shown leaving the building, is co-partner and manager of the exchange. Electra, with a total of 1,600 lines, was converted to dial service in 1953. Electra chose Strowger Automatic equipment to make its conversion.

NEW HOME SECTIONS (left) are springing up as a result of the building boom. Modern shopping districts are easily accessible to all residential areas. There are five modern schools and 18 churches representing all principal denominations.



A. L. ROBB (center), founder and co-partner, Electra Telephone Company, beams down on great grandson, Tony McCarty, in plant room of Electra exchange (right). Smiling approval over Tony's interest is L. C. Wiley, A. E. representative.

AUTOMATIC ELECTRIC GENERAL SYSTEM

Subsidiary of

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"These two Paystations average $148.14 per Month"

REPORTS H. H. RANDALL, GENERAL COMMERCIAL MANAGER, GENERAL TELEPHONE COMPANY OF MICHIGAN, MUSKEGON, MICHIGAN

Busy intersections and paystations go together like ham 'n eggs. In downtown Muskegon, Michigan, increased pedestrian and auto traffic had created several busy intersections. The telephone company did some surveying and decided that these intersections had high revenue potential. Paystations were set up—and they proved profitable. For example: the two paystations above average $148.14 per month.

Let us help you make paystations pay off in your town. Write for a *free* copy of our pocket-size Survey Simplifier. It helps you find paying locations for paystations. Write Automatic Electric Sales Corporation, Northlake, Illinois. Or call Fillmore 5-7111. In Canada, Automatic Electric Sales (Canada) Ltd., Toronto 16.

H. H. Randall

PAYSTATION REVENUE FROM BOOTHS AT BUSY INTERSECTION, MUSKEGON, MICHIGAN

The two paystations at the above intersection totaled $1,777.75 for 12 months. One paystation brought in $919.55; the other, $858.20. Collections cover both local and toll revenue.

AUTOMATIC ELECTRIC GENERAL SYSTEM

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Credit Is an Important *Six-Letter* Word

By BILL CORMAN

"Credit means an entry on the right side of the accountant's ledger — and credit is what every telephone company extends to all subscribers."

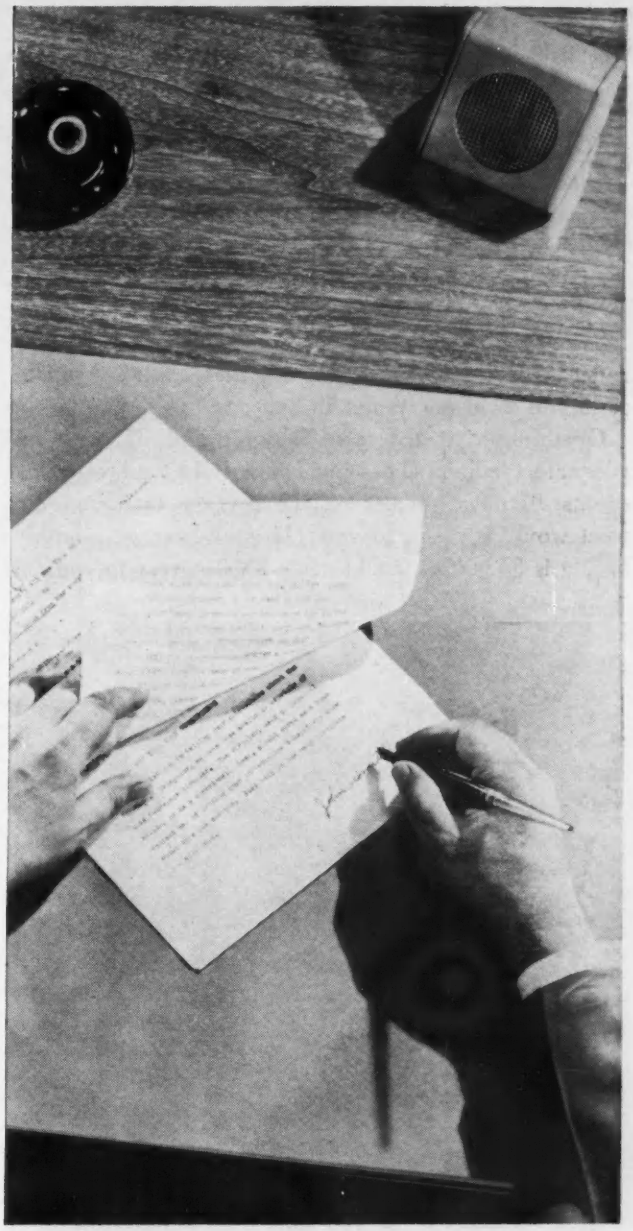
THE WORD "credit" means different things to different people. Keeping our credit good is something every business and most individuals recognize as an important part of modern-day living. Credit means an entry on the right side of an accountant's ledger — and credit is what every telephone company extends to every customer.

Fortunately, telephone rentals are billed on a current basis, as are most other pre-determinable rentals such as house rent. But long distance is something else again. In the usual telephone operation, each subscriber is billed for each long distance call an average of 25 days after he makes the call. The period may be as long as 40 days or as short as 10, but the average is 25 days. Most small company telephone people don't think of themselves as being in the credit business, but if a 25-day delayed billing isn't credit, then I don't understand the word.

Add to this 25 days the 10 days normally allowed for payment, and you have 35 days from the time the charge is incurred to payment. Add to this the 10 to 30 days grace usually allowed, and you have from 45 to 65 days.

"A Sneaky Problem"

TO THE SMALL company, the credit problem is one of the sneakiest in the telephone business. In the really small company, say 50 to 200 or 300 stations, no problem exists. The party who does the collecting is in the credit managers' utopia. He or she knows every creditor, almost intimately. Thus there is no problem.



A collection problem could be heading your way — particularly if you operate a small company which is growing up to be not so small.

But, if the company is like most other companies, it is growing and therein lies the villain. Sooner or later someone the collector doesn't know is not going to pay when he should, and sometime after that the collector is going to find it out. Then the problem — *what to do?* Is he good for it? Is it merely an oversight on the part of a really good customer? Or is it the dodge of a dead-beat?

The collector gets on the telephone, does a little checking and soon has the answer.

But next month there are five such cases, and next year 100. And on some of that hundred, our collector, who used to know everything, doesn't have, and can't find, the first bit of information. But the collector muddles along until someone goes through the stubs or the subscribers' ledger and discovers bad debts totalling several hundred or even several thousand dollars.

This condition could be heading your way — par-

ticularly if you operate a small company which is growing up to be not so small.

"Cost of Credit"

GOING AT it from a different angle, most small companies, even those which have grown up to mediums or small-bigs, have little idea of what this extension of credit costs them. Using 6% as a basis for figuring, we can come up with the following facts: (1) Every $1000 worth of accounts that are 10 days longer in being collected than they should be costs you $60 per year; and (2) $2000 worth of accounts that are 20 days late costs you $240 per year. And so on.

Or think of it the other way around. If, with an adequate credit system, you could collect all your accounts 10 days quicker on the average than you do, what would it mean to you? If your average monthly billing is $5,000, it would mean $300 a year to you. In addition to these strictly mathematical interest savings, it would also mean, very probably, a reduction of bad debts. It doesn't take many $10 to $50 bad debts to add up to a lot of money. An adequate credit system would save much of this.

"An 'A' customer is one you don't have to worry about — come what may he will pay and pay promptly . . ."

"A Difficult Objective"

IN MANY small companies, and even in some larger ones, I have heard the managers say they don't want to institute a credit policy or routine, because they don't want to make people angry. Such an attitude is not only understandable but highly commendable. None of us want to make anyone angry and this should be one of the objectives of any good credit policy. However, it cannot logically be used as a reason for not establishing a credit policy.

Sooner or later, every growing telephone company must set up some credit routines — red tape if you want to call it that. However you state the objective of your particular company a credit policy must sooner or later become one of the essentials in obtaining that objective. Your objective may be "the best possible service for the lowest possible cost," or it may be "adequate service at reasonable cost," or it may be any other similar grouping of words which add up to the same thing.

How does a credit policy fit in? It is not difficult to answer that question. Bad debts (and interest lost on slow collections) are legitimate costs of operating your business. The higher your legitimate operating costs, the higher your rates must be. Thus, a lax credit policy imposes a higher rate on your subscribers than would otherwise be necessary. It is as simple as that.

"Making The Policy Work"

IT IS ONE thing to talk about a "credit policy," and it is something else again to set one up and make it work. The objectives of any credit policy are relatively easy to state: (1) To effect prompt collection of accounts; (2) to minimize bad debt losses; (3) to do these with as little effort and cost as possible; and (4) to maintain customer goodwill.

Maybe you would want to change those objectives a little, or add to them — but those are the essentials. Stating them is easy — doing something effective about them is not.

The first thing to realize is that whether you know it or not, you already have a credit policy. Regardless of who collects, or how, or when, you are working under some sort of policy. Even a decision not to do one thing toward collection other than sending out bills is a credit policy decision. The decision to do nothing is still a decision, or at least it certainly should have been. If such a policy works for you, fine and dandy — but at least realize that you have made such a decision, and that that is your credit policy.

Of course, even most very small companies go somewhat farther than that. For example, they know Mrs. Verylate will forget all about her telephone bill if she isn't reminded, so the collector reminds her about the 15th of each month. Or, they know Jimmy Jim's business is on a very shaky basis, so they have a cup of coffee with him and remind him not to make any unnecessary long distance calls. And so forth. Such action is not only a credit policy, it's probably the best credit policy anyone ever devised — *individual attention and action on every account, based on personal knowledge of the creditor.*

The point I am getting at is that you already have a credit policy and, whatever it is, it has probably worked at least fairly well up to now or you would have done something about it. So, if you are now at the point where you believe something more needs to be done, take your present policy as a starting point and add to it whatever routines you work out. Usually such action works better than suddenly instituting a whole new policy because your employes who have to do the work and

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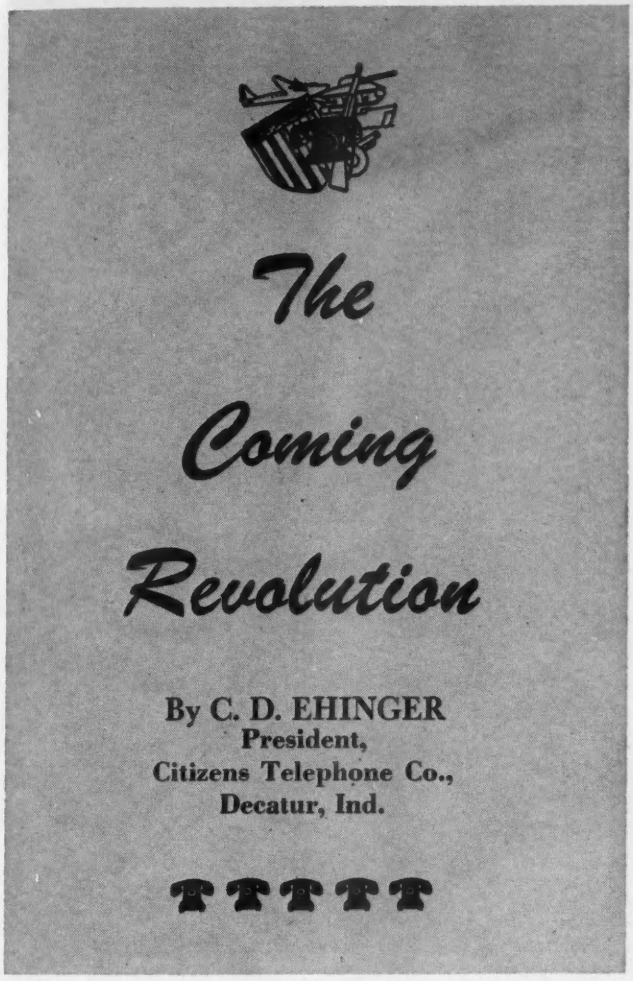

The Coming Revolution

By C. D. EHINGER
President,
Citizens Telephone Co.,
Decatur, Ind.

In Part III of his article on the forthcoming revolution in communications, Mr. Ehinger discusses (1) the hybrid coil, and (2) bandwidth requirements. Part II of this article appeared in the August 15 TE&M.

SOME means must be used to transform from "four-wire" circuits to "two-wire" circuits. The device ordinarily used for such transposition is the hybrid circuit. *Figure Two* shows a simplified schematic of a typical hybrid coil. Z_L is the impedance of the telephone line terminating the hybrid while Z_N represents the impedance of a balancing network. For optimum balance and performance, it is imperative that Z_N exactly match Z_L from the standpoint of circuit values, phase, etc. *Figure Three* (*see page* 34) shows the equivalent "Wheatstone Bridge" circuit of the hybrid coil shown in *Figure Two*.

Referring to *Figure Two*, a simplified schematic of a typical hybrid coil, an understanding of the working of a hybrid coil is easier to obtain if the most basic application is considered.

Let us assume a condition where $T_1 = T_2 = T_3 = T_4$ in a typical transformer action. (The coils T_1 and T_2 in the return path are used only to balance the line to ground and are not used in any transformer action.) Let us further assume that the impedance of the telephone line (Z_L) is 600 ohms and therefore the impedance of the balancing network (Z_N) is also made to be 600 ohms.

For maximum energy transfer, the impedance which Z_L "looks into" should also be 600 ohms. If Z_T is made one-half of this figure, or 300 ohms, then the impedance reflected into the circuit by T_1 should also be 300 ohms. Since the transformer action involving T_1 into T_3 and T_4 is actually a 2 to 1 *turns* ratio, the actual *impedance* ratio is the square of the *turns* ratio, or a 4 to 1 impedance ratio. Accordingly, Z_R must be 1200 ohms in order to reflect 300 ohms at T_1.

Under these conditions, a voltage introduced from the telephone line *into* the hybrid coil will be split in half. One-half of the voltage will appear across T_1 and the other half will appear across Z_T. No voltage will appear across Z_N.

In the case of an incoming voltage introduced by Z_R, the voltage will be divided equally between T_3 and T_4 and will be reflected across T_1 and T_2, by transformer action, with the result that one half the voltage will appear at Z_L and the other half of the voltage will appear at Z_N. No voltage will appear at Z_T.

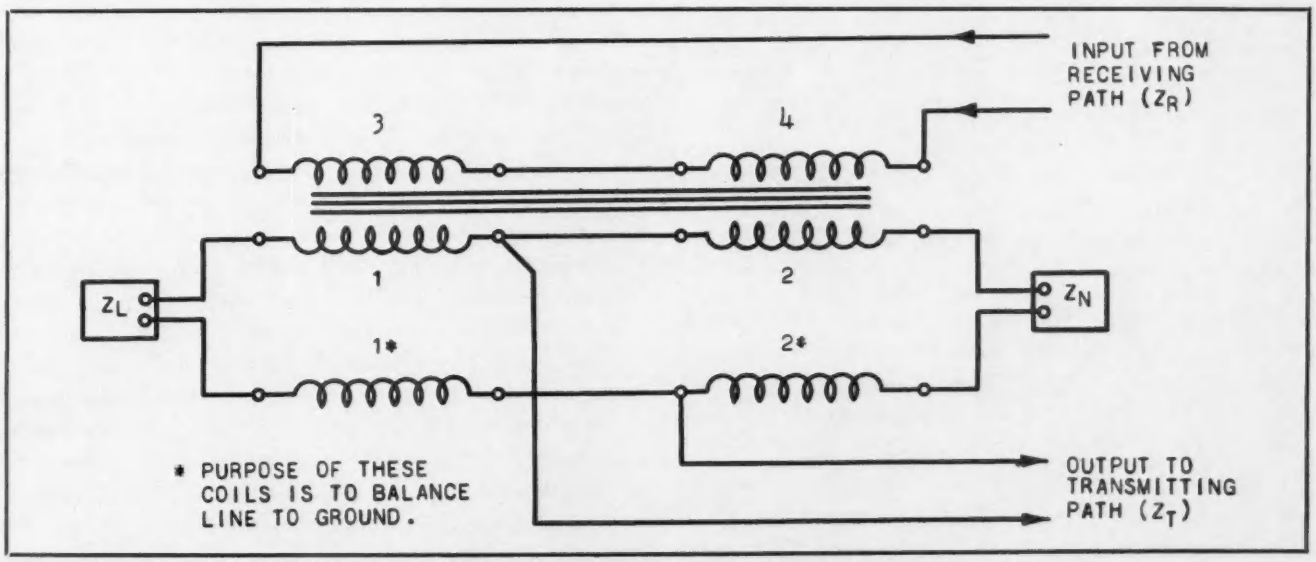

FIG TWO — Simplified schematic of Hybrid Coil.

Using this means, we now have a method of transforming from a "two-wire" to a "four-wire" condition. Energy coming from the two-wire telephone line can be sent into our four-wire system with one-half of the energy appearing in the transmitting path and the other half in the receiving path.

Under ordinary conditions, the voltage appearing across the receiving path causes no complications in connection with "singing," or other oscillatory problems, as this energy is quickly dissipated without traveling further down the line.

In the case of incoming energy, from the receiving path, the hybrid coil switches the received energy in such a way that one-half of the voltage appears across the telephone line and the other one-half of the voltage appears across the balancing network. Although this involves a 6 DB attenuation, no great harm is involved as the main objective is to keep any energy from the transmitting path and consequent "singing" or oscillation conditions.

The hybrid coil provides a very effective electrical means of switching the energy to the desired path and blocking energy transfer to an undesired path. It is an effective "coupler" in the transposition from a two-wire to a four-wire system.

In addition to the increased usage of "four-wire" circuits, many of us in the telephone industry have already felt or will soon feel the impact of more stringent circuit requirements. These requirements will come about by the ever-increasing usage of special facilities.

An incomplete list of such special facilities is as follows: Data processing; telemetering systems; telephoto; facsimile; teletypewriter; video channels; closed circuit TV systems; music distribution systems; AM & FM studio to transmitter channels; and high quality remote pickup channels.

In our usual, everyday job of transporting intelligence by the use of the human voice, we normally use our outside plant facilities and provide suitable communication channels. The band of frequencies which we normally make available lies mainly between 200 and 300 cycles, on the lower end, and 2,800 to 3,000 cycles per second on the higher end. We can accomplish our objective and transmit voice intelligence over non-loaded, nonequalized cable pairs for distances up to approximately three and one-half miles. Actually, our cable pairs present transmission losses, phase-shift, and frequency discrimination but these items are within tolerable limits, from the standpoint of ordinary telephone voice communication.

When supplying circuits for some of the "special services" listed above, ordinary transmission characteristics are no longer suitable. A circuit for a music distribution system or a studio to transmitter channel, as examples, will require distortion-free transmission over frequency band widths having a lower limit of approximately 50 cycles per second and upper band limits that may be 5 kilocycles, 8 kilocycles, or 15 kilocycles, according to the desires of the customer.

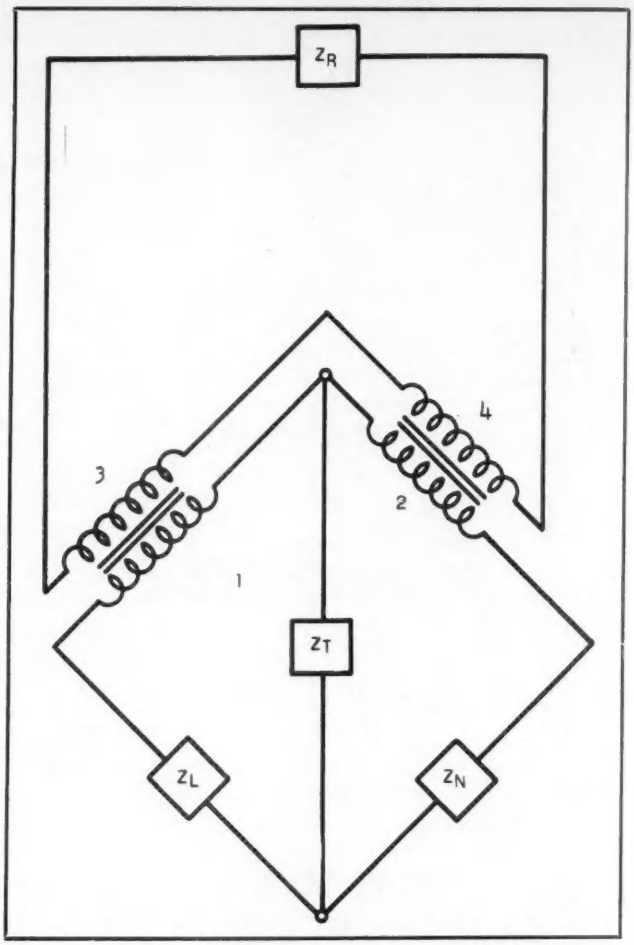

FIG. THREE — Equivalent "Wheatstone Bridge" circuit of Hybrid Coil shown in Figure Two.

A homely example of this requirement is one that is familiar to all of us. An ordinary telephone message "piped in" to a regular broadcast transmitter, and then put on the air, is easily distinguishable from the usual transmission because of its hollow and tinny sound. Repeating again, band width requirements for the usual telephone circuits are simply not suitable for the reproduction of high quality voice and music.

Another "close to home" example may introduce the importance of minimizing time delay and phase distortion under special requirements. It is certainly most disconcerting to watch our television set and have the sound out of synchronization with the lips of the person seen on the screen. If often happened in the early days of sound motion pictures but one hardly expects to see it in today's movies or on today's TV screens.

However, it is quite common for the video portion of a program to be relayed by one medium (usually microwave radio) and for the audio portion to be relayed by another medium (such as wire facilities). Since the velocity of propagation in free space is much faster than the velocity of propagation on wire facilities, it is quite possible for a serious time delay to be occasioned.

Various studies have been made of the amount of time delay that can be tolerated by the usual TV viewer, without noticeable effect. It has been learned that fifty-five milliseconds is the maximum delay between seeing

Please turn to page 59

ACCOUNTING NOTES

by G. M. JONES

Cycle Billing For The Small Company

In Part II of his review of cycle billing, Doctor Jones discusses (1) error prevention and correction, (2) problems in transition, and (3) internal controls. Part I of this article appeared in the August 15 issue of Telephone Engineer & Management.

RECONCILIATION of detail with control accounts is effective in catching errors after they have occurred, but except in the sense that the certainty of check-up is a psychological deterrent to clerical sloppiness, reconciliation does not prevent mistakes being made in the first place. Prevention is obtained by procedures which require systematic proof of accuracy at each transfer of papers from person to person or place to place.

The first such check-point is the establishment of proof totals for transactions by type and in total for each day, and the proving of control group totals to the daily transactions totals. The second check-point for proof of accuracy is when the batches of transaction documents are transferred to the person handling the accounts receivable.

Each batch of papers should be accompanied by a control tape or "batch total slip," and the accounts receivable clerk should run an adding machine total on the papers she receives, to be sure that what she gets is the same as what she was supposed to get. Any differences should be reconciled with the control clerk.

In a reconciliation at this point, an error requires search of only a limited block of accounts rather than of the whole customer file. Even if one person is performing all functions, the proof of totals should be established at this point, because any error caught here will prevent much inconvenience and waste of time later on.

The Author, G. M. JONES, is associate professor of Accounting & Financial Administration, Michigan State University.

The last check-point is at the cycle billing date when the reconciliation is made between the individual account balances and the control account for the cycle. If the prior check points have been observed properly, there should be few differences in this monthly reconciliation, and whatever differences there are, are isolated within this block of accounts.

Problems In Transition

CHANGING over to a cycle billing scheme, like any change involving subscribers, requires a process of education. First of all, the employes who are to handle the accounts may be disturbed because of the seeming complexity of the process. If there are several employes, the levelling out of the work load may mean re-assignment or reduction of staff. These are familiar administrative problems, the solutions for which are not ventured here.

Customers' paying habits have to be changed over, too. Some companies have found it most helpful to begin several months ahead of time with mailings explaining the proposed change and a schedule showing how the particular subscriber will be affected. An invitation to ask questions about the proposal is given. The month before the changeover, a second mailing again explains the system. Finally, in the month of change, a simply written explanation is included with the customer's bill. Some payment period or date is indicated clearly ("due upon receipt of this invoice" or "due within 10 days of this billing date") in order to establish the new payment pattern for the subscriber. Then, for those customers who object to the new schedule or fail to pay within a reasonable time after billing, a personal selling job is in order.

Internal Controls — General

A FEW GENERAL rules govern the maintenance of integrity of the customer accounts, but these same rules are in fact applicable to all assets. A cycle billing system must conform to these rules. Some of them are:

(1) Separation of duties so that one person does not have full charge of a transaction. For instance, the accounts receivable clerk should have no part in originating transactions and no part in handling the cash collected from the subscriber. Thus, he cannot "forget" to record services or sales to a friend or relative, nor can he "forget" to record cash received.

(2) A periodic review of the performance of each person's function by a completely independent person. Anticipation of such a review for an undisclosed sample period, performed at an unexpected time, is a substantial deterrent to manipulation of records.

(3) Retention of evidence of transactions and their disposition.

coming

CONVENTIONS

TENNESSEE Telephone Association, Hermitage Hotel, Nashville, Tennessee, Sept. 9-10, 1959.

ARKANSAS Telephone Association, Arlington Hotel, Hot Springs, Ark., Sept. 14-15, 1959.

MICHIGAN Telephone Association, Pantlind Hotel, Grand Rapids, Mich., September 16, 17, 1959.

ROCKY MOUNTAIN Tel. Association, Utah Hotel, Salt Lake City, Utah, September 16, 17, 18, 1959.

NEW ENGLAND Tel. Association, Mt. Washington Hotel, Bretton Woods, New Hampshire, Sept. 21, 22, 23, 1959.

WEST VIRGINIA Tel. Association, Blackwater Falls Lodge, Davis, W. Va., Sept. 23, 24.

NEVADA Tel. Association, Stockmen's Hotel, Elko, Nev., Sept. 23, 24, 25, 1959.

NORTH CAROLINA Tel. Association, Carolina Hotel, Pinehurst, N. C., Oct. 4-7.

ALASKA Tel. Association, Westward Hotel, Anchorage, Alaska, Oct. 5, 6, 7.

NATIONAL CONVENTION, Conrad Hilton Hotel, Chicago, Ill., Oct. 11-14.

SOUTH CAROLINA Tel. Assoc., Clemson House, Clemson, S. C., Oct. 25, 26, 27, 1959.

VIRGINIA Tel. Association, Roanoke Hotel, Roanoke, Va., Oct. 29-30.

ALABAMA Tel. Association, Thomas Jefferson Hotel, Birmingham, Ala., Nov. 9-10.

GEORGIA Tel. Association, Dinkler Plaza Hotel, Atlanta, Ga., Nov. 11, 12, 1959.

OKLAHOMA Tel. Association, Skirvin Hotel, Oklahoma City, Nov. 18-19.

FLORIDA Tel. Association, Robert Meyer Hotel, Jacksonville, Fla., Nov. 30, Dec. 1, 1959.

Some people say that all evidence of customer dealings, collections, write-offs, adjustments, and so on, should be kept for at least 18 months, preferably not in the custody of persons who originated or used the documents.

(4) Verification of dollar amounts involved in transfers of batches of paper. Make sure that what you receive is the same as what the other department says they have given you.

(5) Security for customer records. Nothing can create more confusion in a customer account file than letting papers be borrowed from the files. The only exception to a no-lending rule is an issuance of documents only to authorized persons (for credit use, or investigation of differences) and then only with a check-out receipt showing who has it and for how long, and why.

(6) Verification of account balances by an independent source at intervals. Independent verification of authenticity and authority for write-offs of any customer accounts.

In smaller offices, where an adequate separation of duties is impossible, to provide the desired internal control, more reliance must be placed on audit techniques to make sure that the record system is functioning as intended. This is especially true in a cycle billing system, because of the lack of a full clear-cut monthly reconciliation to the master control account in the general ledger. — *G. M. Jones.*

Telephone Service Will Be Brought to Telephone, Texas

By GEORGE B. FORBES

GET OUT your atlas, turn to Texas, look for Fannin County north and a little east of Dallas, bordering Arkansas. You'll find the town of Telephone. You can drive there, send a letter there, but don't try to telephone Telephone — at least not yet!

Once there were telephones in Telephone, but a severe ice storm some 11 years ago laid the entire plant as flat as the Texas plain; in so doing it wiped out the threadbare company that furnished the service. Other larger organizations were sympathetic but busy, and the months of isolation stretched into years — then a decade.

A new corporation — the Win-Tel Telephone Co. — has recently been organized: robust with the financial assistance of the government and equally strong in the man chosen to run the business — Mr. James Whitworth. He brings to this challenging job many years of experience, first with the Gulf States Telephone Co. at Kaufman, Texas, and later as manager of the Etex Telephone Cooperative at Gilmer.

Mr. Whitworth has already let his central office requirements at Telephone and Windom out for bids, and is proceeding with all speed to get his buildings and outside plant in readiness.

This time they are taking no chances with another ice storm — the outside plant will be built *entirely* underground, making it the first R.E.A.-financed project to be constructed underground in Texas and possibly the first anywhere.

Among the several hundred people who look forward eagerly to telephone service for the first time in all these years is Mr. Sam Rayburn — "Speaker Sam" of the U. S. House of Representatives. "Mr. Sam" has a ranch in the area to be served by the Win-Tel Telephone Company; like all the other worthy people, his needs were overlooked. Now that service can be provided through the new corporation, however, other companies have suddenly become aware of the situation.

Mr. Whitworth has assured his customers that this time they'll have the best equipment on the market today. And when the job is completed sometime next Spring, the telephone bells will ring again in Telephone, Texas!

COMMERCIAL DEPARTMENT NOTES

by ALLAN R. STACEY

"Teletrainer" Trains Young Subscribers

Illinois Telephone Association uses "Teletrainer" kits to teach proper telephone usage to young subscribers. During a four-month period, students of 28 grade and high schools received instruction.

OUR CONGRATULATIONS go to the Illinois Telephone Association and its able Secretary, J. G. Hardy, for tackling the problem of teaching proper telephone usage to young subscribers. During 1958 the Illinois Association purchased six Teletrainer kits, complete with long cords and dial telephones, at an approximate cost of $1600. Each kit included telephone equipment, a Teacher's Guide, Student Practice Cases, and a brochure entitled "Telephone Pointers."

The author, ALLAN R. STACEY, is vice-president of the Sunland-Tujunga Tel. Co., Sunland, Calif.

An Association Service

THE TELETRAINER kits were furnished free of charge to Class C and D telephone companies who were members of the Association with the literature to be purchased by the company using the kit. During a four-month period, 28 grade and high schools received instruction from the Teletrainer. More than 2,000 students were involved in the program, and this was only the beginning.

The accompanying picture shows a class at Okaw Community High School, Okawville, Illinois, taking instructions on the Teletrainer. You will note M. A. Kugler, president, Okaw Commercial Telephone Co., attending this class session.

School Reaction Excellent

THE PROGRAM was enthusiastically received by school principals and teachers, as well as by students. Some comments of the principals and teachers included:

"Excellent — allows for individual and class participation."

"Wonderful as a teaching aid."

"Teaches students proper courtesies to be observed when using a telephone."

The purpose of this material is to provide guidance which will help students learn to use the telephone in a correct and pleasing way. It is certainly our responsibility as operating telephone people to give every assistance to this kind of endeavor. In fact, many employes of our own companies are remiss in the proper usage of the telephone. We could well be using this type of training in our own house!

Let's see how one of these Teletraining programs work.

The "Teletrainer" Equipment

THE COMPLETE kit consists of an equipment box, 9 inches by 8 inches, with a built-in amplifier and loudspeaker, and two connected telephones. Mounted on a slanted panel are simple controls for simulating dial tones, busy signals, the ringing of either telephone and the control of the loudspeaker. The two telephones are equipped with twenty-five feet of additional wiring so that students may make telephone practice calls under fairly normal conditions. The signals, as well as speech, between the telephones may be heard clearly in large classrooms.

Included is a series of practice calls to be used in conjunction with the Teletrainer. Many of these represent simple situations which are within the experience of a student and that might be made to trades people or that a new employe would likely be called upon to handle during early days on the job. The material has

"Teletrainer" class at Okaw Community High School, Okawville, Ill. M. A. KUGLER, president of Okaw Commercial Telephone Co. and a director of the Illinois Telephone Association, attended class session.

You're never out of

Naturally you don't want to get in deep water where construction materials and supplies are concerned.

Well, there's no need for you to flounder around. Just let us know what you need. We'll slip into our SCUBA and be on our way instantly with a lifeline!

No need to feel any pressure at all. Our expert snorkelers can get to you fast from our well-equipped, strategically located decompression chambers. Thorough training and years of experience keep our supply organization at a constant high-water mark of

STROMBERG-CARLSON

A DIVISION OF **GENERAL DYNAMICS CORPORATION**

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# of our depth!

efficiency. And we have oceans of construction materials and supplies to meet your every requirement.

So give us the signal, and we'll paddle full speed ahead to serve you. Remember, you're never out of our depth when it comes to supplies!

KEN JOHNSON, a top skin diver from our San Francisco decompression chamber.

been designed so that principles of good usage can be learned through actual practice.

The instruction program is divided into such major segments as Answering Telephone Calls, Making Telephone Calls, Using the Directory, Out-of-Town Telephone Calls, Telephone Personality.

How To Answer The Telephone

THE TELETRAINER says that answering a telephone call is very similar to welcoming a visitor. Since the telephone visitor cannot see the welcoming smile or the look of recognition that comprise a warm greeting, he must judge his reception and gain his first impression of a business by what he hears.

Answering promptly is the first responsibility. Recommended discussion centers around reasons for answering promptly, such as prompt service making people feel important, or, an impression of efficiency being given which increases the caller's confidence in the company being called.

The next responsibility is to give clear identification in order that the person doing the calling is quickly advised as to who is answering. Several methods are described. If the answering party is a representative of a company with no switchboard, he would respond, "Ajax Company, Mr. Smith."

If answering for someone else, we might say, "Mr. Sampson's office, Miss Delilah," or, "Mr. Sampson's telephone, Jones speaking."

In answering a departmental telephone, a clear form of identification would be the department followed by the individual's name, "Personnel Department, Miss Jones."

Offering a choice of waiting or being called back is recommended and discussed by Teletrainer. It is pointed out that such phrases as, "Just a minute," or, "Hold on" may sound abrupt and a better answer might be, "Yes, he is in. Just a moment and I will call him," or, "Mr. Parker is talking on another phone. May I help you?"

Since a caller may be very busy and not wish to wait, he should be

given a choice of waiting or being called back using such phrases as, "He is still talking on the other telephone. May he call you back?"

The best methods of taking messages are discussed including what information should be given and what are appropriate remarks. For example, the message might be, "Mr. Moore will be out of town until Thursday. May I help you?" and then an offer to record a message and see that it reaches Mr. Moore.

Leaving The Telephone And Transferring A Call

THE TELETRAINER gives excellent material on what to say or do when having to leave the line to secure information. It discusses how to indicate to a caller that it is necessary to leave the line and what to do to attract his attention upon returning to the telephone. Some recommended phrases are, "Will you excuse me, Mr. Johnson, while I check that for you?" "Thank you for waiting, Mr. Johnson, I now have the information for you."

SUBMIT YOUR PROBLEMS

You are invited . . . to tell our authors about problems on which you'd like to have an opinion.

While we don't claim to have all the answers, we'll welcome the opportunity to discuss as many as possible in TE&M's regular departmental columns . . . and that could be helpful to you and others with the same (or equal) problem.

By use of the Teletrainer, the mechanics of transferring a call on a switchboard may be illustrated. Teletrainer says when it is necessary to transfer a call, the caller should be told so in a courteous way like, "I will be glad to transfer you to Mr. Green." Recommended information to give the switchboard operator when she answers a transfer includes, "Will you please transfer this call to Mr. Lamb?"

Practice Makes Perfect

THE TELETRAINER kit has pages of practice calls, complete with instructions to the teacher, as to the most effective use. These practice calls cover common situations and contain dialogue for both sides of a conversation along with suggested questions for classroom discussions to develop the techniques of good telephone usage which were illustrated in the practice call. These practice calls are intended to demonstrate the proper use of the telephone rather than to show how any particular business may handle the details of its transactions.

"I *thought* them poles looked kinda' green when we set 'em!"

Placing A Telephone Call

THE TELETRAINER presents training material which emphasizes the necessity for having the correct telephone number before originating the call and illustrates where to obtain these numbers and how to make calls. For example, material is presented on how to make a call through a switchboard and what to do if you get a wrong number in placing a call.

Proper dialing methods are demonstrated. What to do in case of making an error in dialing is disclosed and what to do if cut off during a call.

One section of the Teletrainer is devoted to using the directory and explains that telephone directories are much like other reference books. Mention is made of how names are listed in the alphabetical directory and what the purpose is of the yellow pages. In addition, and here is the portion that I like, a good discussion is included of under what circumstances an additional listing would be helpful in identifying a person's telephone number, and further, what other names should be included under a cross-reference listing. (These are good profit items for the telephone industry.)

Teletrainer provides complete instructions on methods of placing station-to-station and person-to-person calls including a graphic description of the principal differences in these calls and the advantages of each type. Mention is made of collect calls, lower rates for nights and Sundays and methods of placing long distance calls through a switchboard in a business office.

Overtones

THE FINAL section of the Teletrainer discusses developing a telephone personality. Described are the importance of overtones with specific suggestions as to basic items of courtesy, how to convey personal attention by telephone, how to indicate a spirit of helpfulness and why it is bad to blame another person or part of an organization for a mistake. Such helpful tools as tuning the voice and using emphasis to convey meanings are described and practice calls demonstrate the ways of developing a telephone personality.

The presentation of this Teletraining program is certainly a step forward by one of our fine state associations. Perhaps other associations should explore this matter. In addition, I suspect each of us might begin by applying this type of training to people in our own organization and then branch out to do our best to see that it becomes a regular part of the broad school program.

Only 115 shopping days before Christmas. Next issue we'll talk about starting now to organize Christmas promotions in the telephone industry. See you then. — *Allan R. Stacey.*

Any comments, criticisms, or suggested subjects as future topics? Address all correspondence to "Commercial Department Notes," "Telephone Engineer and Management," 7720 Sheridan Road, Chicago 26, Ill.

PLANT NOTES ON NEW DEVELOPMENTS

by JOHN S. REED

New, Flexible Cable Sheath

New cable sheath provides a flexible covering for cable cores that is impervious to gases, chemicals and water . . . New parallel type power connector used as strand ground clamp.

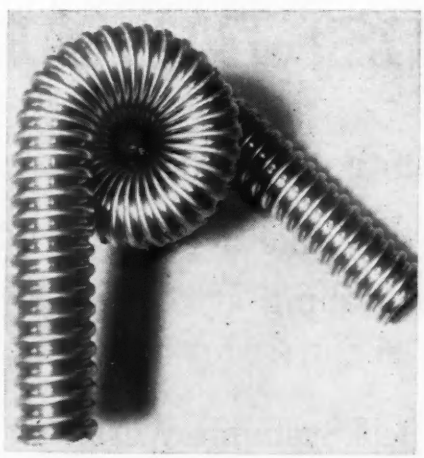
New Cable Sheath Features High Flexibility

ARMORED CABLE has a certain degree of flexibility that makes it useful in conduit construction. However, ordinary types of armored cable cannot prevent water entry and their use must be confined to reasonably dry locations.

A completely sealed conduit is now available that has the desirable features of flexibility combined with imperviousness to gases, chemicals, and water. The flexible conduit, illustrated, provides a completely sealed unit with built-in cable. It is said to combine all the advantages of lead-sheathed and interlocker armored cables, with its own intrinsic qualities of great strength and extremely light weight. Its pliability enables ease of installation.

JOHN S. REED, TE&M's technical editor, is plant methods supervisor, Lincoln (Neb.) Telephone & Telegraph Co.

The flexible cable is suitable for installation in trays or by fastening with clamps. It can be used aerially or buried directly in the ground. It is designed to be used with communication or power conductors, the desired core arrangement being made up at the factory.



New cable sheath provides a flexible covering for cable cores that is impervious to gases, chemicals, and water. (Simplex Wire & Cable Co.)

Before its introduction into this country the flexible cable gave exceptional service in European installations. It has been adapted in America to increase its scope of industrial applications.

Parallel Type Power Connector Used as Strand Ground Clamp

STRAND GROUND clamps are employed for connecting ground wire or bond wire to cable messengers. One company has adopted a power type connector designed to connect large strand conductors at taps for connecting heavy ground wire leads to cable messenger at grounding points. These locations are where a protected terminal is employed as at junctions of open wire with cable, and at intervals along a cable lead where the messenger is bonded

Showing use of Chance PG-110-AGP parallel type connector for connecting ground wire to cable messenger.

to power grounding conductors for obtaining a grounding network. Various wire and strand sizes can be accommodated by one clamp size. It should be noted that, when the clamp is attached to the messenger to which the cable is lashed directly, the clamp should be set at an angle so that the protruding end of the clamp will not press on the cable sheath.

Polyvinyl Chloride Conduit

A NEW type of pipe composed of rigid unplasticized polyvinyl chloride can be used for conduits in certain installations of telephone cable in locations where corrosion is a problem. This type of PVC pipe is known for its corrosive-resistant qualities, light weight and easy installation in a variety of industrial applications.

Although regular conduit bends can be obtained, field bending of smaller sizes is easily done with a standard electrician's conduit bender. Use of a small propane torch for bends greater than 45 degrees is recommended.

Among other features, chemical resistance of the PVC pipe makes it especially suitable for applications where corrosion is a problem. It resists attack by acids, alkalies, salt solutions and alcohol, as well as other chemicals. Because it is also resistant to fungi, soil and bacterial action, the PVC pipe is recommended for underground installations. It is rigid so it

TELEPHONE CALLS BRING

Who can be lonely when there's a phone nearby?

Nothing perks up the day like a cheerful telephone visit, whether you're calling across the town or across the country.

An important job of Bell System advertising is reminding people of the friendly value of their tele-

FRIENDLY SMILES

phones. And urging them to make more calls to keep in touch. Right now, for instance, our ad entitled "Be a friend, phone a friend... it makes two people happy," is appearing in national magazines.

It's a reminder that will be read by customers of every telephone company.

BELL TELEPHONE SYSTEM

TELEPHONE ENGINEER & MANAGEMENT'S

PLANT MAN'S 'SPEC' BOOK

(38) Tree and Brush Control — Trimming Trees and Cutting Brush

For extensive tree removal work, tree loppers as illustrated in *Figure* 18 may be employed. These tools

FIG. 18: — Using air powered pruners for cutting branches up to two inches in diameter.

function on compressed air and are powerful and rapid in operation.

Rotary saws on poles are also used in tree trimming and brush removal. *Figure* 19 illustrates a typical use of this type of saw in removing undergrowths.

Power chain saws are very efficient tools for cut-

TELEPHONE ENGINEER & MANAGEMENT'S

PLANT MAN'S 'SPEC' BOOK

(39) Tree and Brush Control —Trimming Trees and Cutting Brush

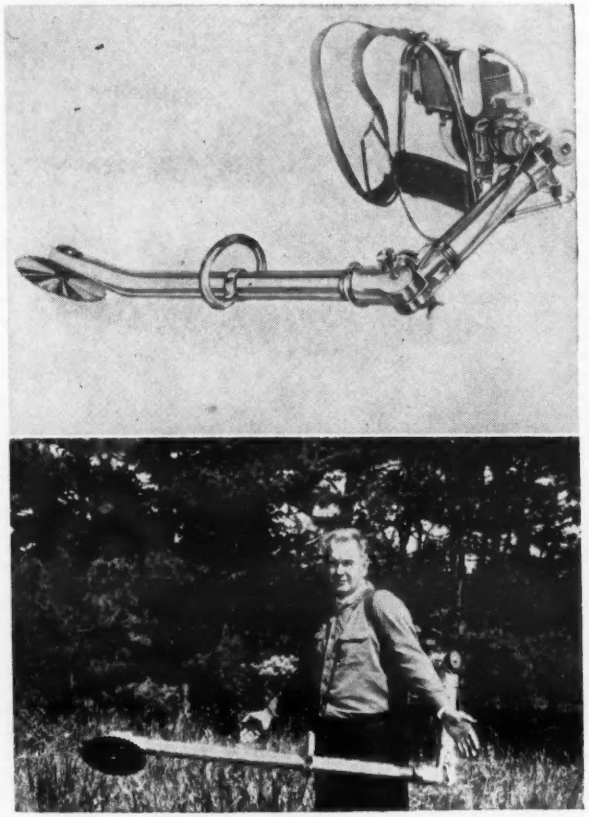


FIG. 19: — Rotary type pole saw for cutting underbrush.

TELEPHONE ENGINEER & MANAGEMENT'S

PLANT MAN'S 'SPEC' BOOK

(40) Tree and Brush Control — Trimming Trees and Cutting Brush

FIG. 20: — Use of gasoline engine powered chain saw for felling a tree.

ting down trees, lopping off tree limbs, and bucking operations. *Figure* 20 illustrates a typical use of chain saws. Two general types of saws are employed, electric and gas-powered.

More Data For Your "Spec Book" on Page 45.

More Data For Your "Spec Book" on Page 45.

TELEPHONE ENGINEER & MANAGEMENT'S

PLANT MAN'S "SPEC" BOOK

(41) Tree and Brush Control — Trimming Trees and Cutting Brush

Gas-powered saws are satisfactory for extensive cutting of trees where there is a good deal of bucking work and a high-power, heavy duty unit is needed. The gasoline engine can be kept at peak performance in such work and it will receive regular maintenance that all gasoline engines require. It is more difficult to properly care for the engine when the saw is used only occasionally.

For occasional tree cutting and bucking work, particularly when the tool is carried up into the tree to lop off limbs in taking the tree down piecemeal, electric driven saws will be found very useful as they are usually smaller and lighter in weight. The electric motor unit requires less maintenance than a comparable gas-powered unit, though the chain links and cutters will require just as much repair work and replacements.

When electric saws are employed, it will be necessary to transport a portable gasoline-engine driven electric generator in the truck for operating the saws. Alternatively, the truck may be equipped with a generator operated from the truck transmission. Either type of generator should have adequate capacity, around 2500 watts, to operate the saw motor under severe overloading conditions. It is important that the connecting electric cord be large enough to carry the needed current without creating an excessive voltage drop which may cause overheating of the saw motor. The cord conductors should be #14 or even #12 gauge when long lengths are required to take the saw some distance from the truck.

TELEPHONE ENGINEER & MANAGEMENT'S

PLANT MAN'S "SPEC" BOOK

(42) Tree and Brush Control — Trimming Trees and Cutting Brush

Precautions in Using Power Chain Saws

Proper precautions are needed when cutting down trees with a chain saw. If there is loose bark on the trunk where the cut is to be made, the bark should be cut away with an axe. Then, the saw will not throw it into the face of the operator. An undercut should be made on all except small trees to the proper depth on the side of desired direction of fall and notched out with an axe as shown in *Figure* 14.

When trees must be cut flush with the ground, it is safer to make the first cut at a stump height and then flush with the ground after the tree is down.

As the cut proceeds, the operator should check to see that the cut on the tailstock end is even with the depth of cut on the engine end. If any binding occurs, wooden wedges may be placed, taking care not to drive them in against the chain, or the guy rope may be pulled to prevent binding. When the final cut is in to the proper depth for felling, the tree should be pulled over. The operator must be careful in making the final cut. With the high operating speed of the saw, the tree may be cut clear off so that there is no control over the direction of fall.

Small brush should not be cut with a power saw as it may either knock over the operator or throw the butt of the brush back at him.

On very steep slopes a one-man saw is safer because one operator can quickly abandon the saw if the tree should fall in the wrong direction.

When the tree leans in the opposite direction to that of its intended direction of fall, then it is safer to use a cross-cut hand saw.

The operator should be very careful not to let his

TELEPHONE ENGINEER & MANAGEMENT'S

PLANT MAN'S "SPEC" BOOK

(43) Tree and Brush Control — Trimming Trees and Cutting Brush

hand slip over the edge of the outboard handle of the chain saw. The hand can be very easily pulled into the chain especially when gloves are worn. This can happen when the saw is used in a horizontal position and the guard where the hand is placed is on the underside of the saw.

Care of Tools Used in Tree Trimming Work

As a matter of safety, tools used in trimming or removing trees and cutting brush should be checked frequently for defects. Defective tools should be repaired or replaced.

All tree pruning equipment requires proper maintenance. Cutting tools must be kept sharp for working ease and safety. A poorly cutting tool causes annoyance to the worker and wastes his time. Dull axes are tiring to use and considerably slow the chopping work. When saws need sharpening, it is best to have a competent shop perform this work, since it will have automatic machines that do an accurate job of setting the saw teeth and sharpening them at reasonable cost.

The wood parts of tools employes use in trimming work, such as ladder rails and rungs, blade trimmer and pole saw handles, and axe handles, need smoothing down with fine sandpaper and shellacking to preserve the surface.

Ropes used in tree removal work need proper care to assure long service life and safety for the workers using them. It is important that the ropes not be dragged over sharp objects or stored with sharp tools. If they get wet, they should be dried out before being stored, to avoid rotting.

More Data For Your "Spec Book" In The Next Issue.

Whenever, Wherever you need

Complete, Dependable

Call Kellogg

Whatever it takes to operate a telephone company—*you can get it all from Kellogg*... a single, reliable source serving independent telephony for more than 60 years with equipment of unmatched dependability and advanced engineering.

Whether or not your immediate needs are shown on these pages, call Kellogg *first before you buy*—your centrally-located Kellogg warehouse has exactly what you're looking for.

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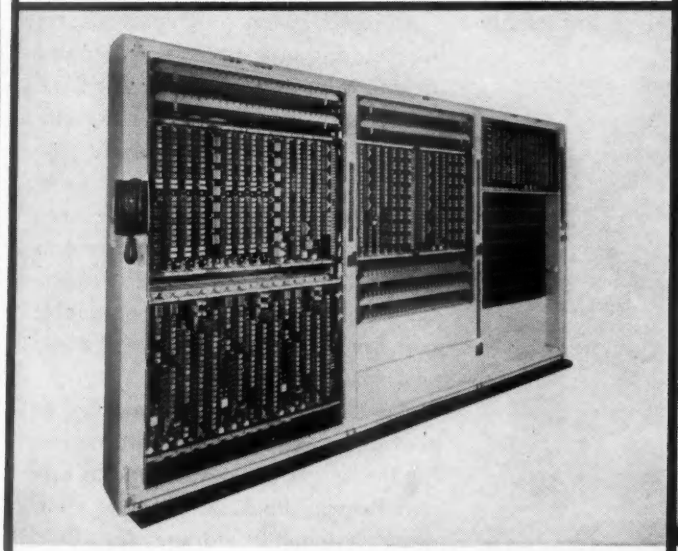
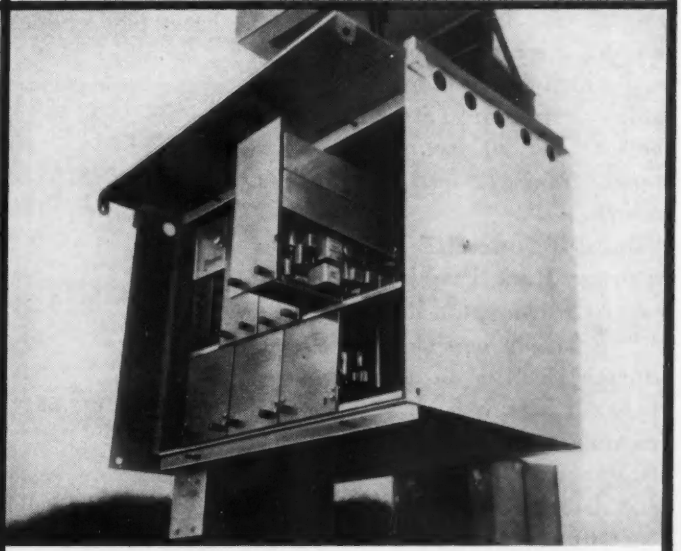
Equipment and Service

K-500 Telephones—The most advanced and reliable instruments available to independent telephony. Available in 9 sparkling decorator colors that your subscribers want (plus black) —in both desk and popular wall models.

K1A1 Key Telephone System — Complete system access in one telephone: "Hold" buttons, added subscriber lines—any selection desired on the fast, easy-to-use buttons. "Executive exclusion" feature for confidential calls. Full color range.



Switching Systems—K-60 Crossbar—Tailored to fit any requirement. One unit handles from 10 to 10,000 lines... meets requirements of nation-wide toll dialing. Many exclusive features found in no other system.



Kellogg K-31 Carrier—New rural subscriber carrier system provides toll quality at low cost. Completely transistorized... up to 8 separate voice channels... printed circuits... plug-in construction. Easy to install, line up and test.

can also be used for overhead installations with pipe supports.

Along with making general handling easier, the light weight of PVC pipe facilitates its installation in cramped and difficult-to-reach places. The smooth internal surface provides trouble-free drawing of cable or wire.

The PVC pipe can be readily joined by a number of methods including solvent cementing, threading and heat welding. Threading is only recommended for heavy wall conduit. While the service requirements of the installation determine the best method of joining, solvent cementing is highly recommended since it is the fastest and easiest method and produces the highest joint strength. Its speed and simplicity reduces installation costs.

PVC conduit can be easily cut with a hack saw (see illustration), tubing cutter or rotary power saw. Since it is desirable to obtain a square cut, especially when threaded joints are required, a mitre box should be used when cutting with a hand hack saw.

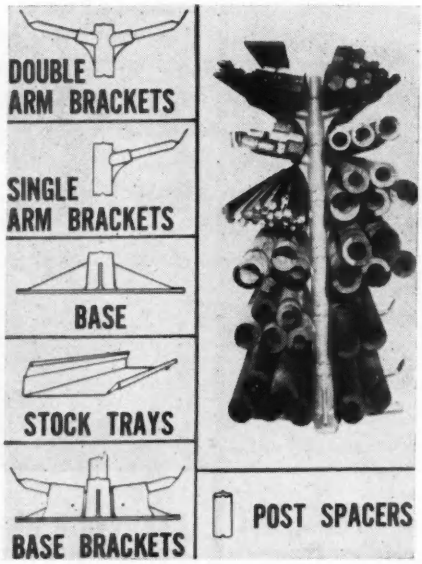
Two types of unplasticized rigid polyvinyl chloride pipe are available. The normal impact type is designed for installations requiring the highest chemical resistance attainable together with high strength and excellent creep properties. The high-impact pipe is for installations requiring excellent chemical resistance and a high degree of toughness, even at low temperatures. Standard lengths are 10 and 20 feet. Nominal size ranges from 1/2 inch to 12 inches.

National PVC conduit is easily cut with a hack saw. Although ninety-degree bends are available, bends for smaller pipe can be done on the job by using the standard electrician's conduit bender. A small propane torch should be used for bends greater than 45 degrees. Sections of conduit are readily joined by simple solvent cementing. Solvent cementing is recommended for most installations since it is the fastest and easiest method and results in the highest joint strength. (National Tube Division of U.S. Steel)

"Build-It-Yourself" Storage Rack Problem

A NEW concept in storage methods makes it possible to construct storage facilities on a do-it-yourself basis for bars, rods, pipe, tubing and molding, as well as long handled tools, like digging shovels, pike poles, and tamps used in telephone plant operations.

The basis of the system is sectional construction of stock racks by the user to his particular needs. A variety of standard rack components can be easily and quickly combined — without the need of professional assistance — to store various sizes of materials and tools. While certain parts would be difficult or expensive to substitute, a combination of standard parts such as 2", 2½" and 2½" extra heavy pipe lengths, which are readily available in many shops, provide excellent storage facilities without loss of any of the benefits inherent in the method illustrated. Stock becomes readily accessible, requires minimum space and is easily rearranged.



Equipment for making storage racks for long materials and tools. (Brown Engineering Company)

All-metal bases, post spacers, arm brackets and pipe arms are assembled on lengths of either 2", 2½", or 2½" extra heavy pipe. The necessary sections are placed over the upright pipe placed in the base socket. The racks may be either double or single arm, as space and storage requirements dictate. Standard parts consist of single or double bases, single or double arm brackets in various lengths and post spacers.

Base brackets may be installed to provide an extra arm without increasing the height of the rack and to support heavier stock. Stock trays allow neat, systematic storage for short pieces and light gauge items which need support to prevent sagging. They are easily installed by laying them on the arms and overlapping them for as long a continuous shelf as needed.

THIS IS AUTOMATIC'S TYPE 58 LOADING COIL

...it's smaller
...it's lighter
...it's important to you!

With the development of this smaller, lighter loading coil, Automatic Electric brings you two important benefits:
(1) You'll save valuable space in vault installations, and
(2) You can use lighter poles for aerial mountings.

The Type 58 loading coil is about the diameter of a half dollar. What's the secret? Molybdenum-permalloy—a core material with high permeability that permits a much smaller core. Result: a lighter, smaller coil. In addition, Type 58 loading coils are moisture-proofed in a new way. Instead of using impregnating materials, they're pressure-sealed in gas-tight steel cases.

If you're looking for an economical way to meet top transmission standards on inter-office trunks, long subscriber loops, or for Direct Distance Dialing, consider Automatic's Type 58 loading coils. Incidentally, they're fully compatible with Western Electric models.

To find out all about this new loading coil, write for Circular 1886. It contains complete information. Address: *Automatic Electric Sales Corporation, Northlake, Illinois. Or call Fillmore 5-7111.*

AUTOMATIC ELECTRIC GENERAL SYSTEM
Subsidiary of
GENERAL TELEPHONE & ELECTRONICS

DESIGNED AND MANUFACTURED BY AUTOMATIC ELECTRIC
FOR THE INDEPENDENT TELEPHONE INDUSTRY

Leich's Cordless PBX available in 12, 16 and 20 line capacities.

NEW PRODUCTS' SHOWCASE

BY DICK REYNOLDS

Cordless PBX

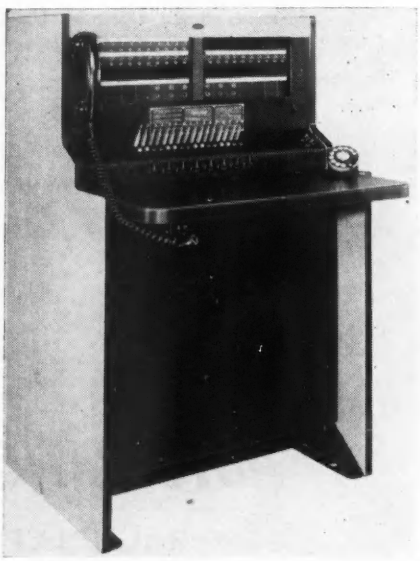
LEICH SALES Corp. has announced that it is now in full production on a new cordless PBX switchboard. It is available in 12, 16 and 20 line capacities with 5 connecting circuits and 5 central office trunks. The switchboard is 6½ inches long, 16 inches wide, 7½ inches high and weighs about 47 pounds. It has an attractive grey finish.

A combination of color-coded keys and a low, sloping face lets an attendant extend calls quickly, without reaching or looking up. Odd numbered station line keys are beige, while even numbered keys are black. Trunk and operator keys are grey. Each key on the PBX has only one operative position. To reduce the chance of error even further, alternate keys operate in opposite directions.

A built-in multiple on line keys and trunk keys is another feature of Leich's Cordless. It removes many possible sources of trouble by eliminating the wiring of each key to all the other keys. *Check NP* 274.

L55 PBX Switchboard

A NEW floor-type PBX offering a unique keyboard and jack-in circuits has also been announced by Leich Sales Corp. The switchboard is



Leich's L55 PBX, and was not previously available to the Independent telephone industry.

The L55 PBX has a formica-type cabinet that is nonflammable and stain-resistant. Both pushbutton ringing keys and twist-push type talk keys are in a sloping position above the writing shelf. The attendant extends calls quickly and the writing shelf is completely free of keys so she can perform other office duties.

Jack-in circuits allow easy addition, removal, or servicing of equipment. Cord-circuits, operator's circuit and central office trunks are jack-in units. Conference and tie trunk jack units are also jack-in type. The new cord circuits used in the PBX have also been designed for maximum range.

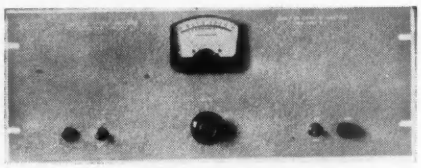
The switchboard is 29 3/8″ wide, 29 7/16″ deep and 46 1/16″ high. The surface of the writing shelf is 30″ from the floor.

Two basic models, the L55-A3 and L55-B4, are available from stock. Additional lines, trunks and cords may be ordered up to capacity, plus optional service features, if required. *Check NP* 275.

A.V.C. Amplifier

AMPLIFIER Corp. of America has developed an automatic volume control amplifier which maintains a constant output within ± 1 db with input of 30 db. Exceedingly rapid automatic gain reduction prevents syllable clipping, and slow automatic gain increase avoids automatic control at syllabic frequencies.

The amplifier basically consists of a two stage push-pull circuit. The operating conditions of the input stage have been carefully determined so as to provide optimum limiter action with minimum distortion. The input may either be connected directly to a balanced 600 ohm line (with either

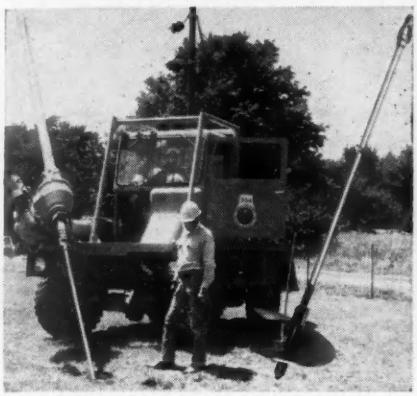


or neither side grounded) or it may be bridged across a 600 ohm line without upsetting line impedance.

An on-off switch, a meter transfer switch and an attenuator are its only controls. A special double-scale meter is made to serve two functions, for output level (VU) readings and for indicating the degree of attenuation at any given instant. *Check NP* 276.

Screw Anchors

A NEW line of power-installed screw anchors has been announced by the A. B. Chance Co. The anchors are designed to be installed with the



power hole-diggers used by utilities for line construction.

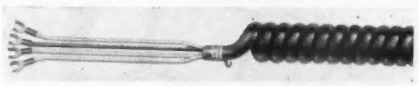
These anchors are adapted to power equipment by means of a special installing wrench. (This wrench does not come with the anchors; it is purchased separately.) The wrench fits over the anchor and carries the installation torque. It attaches to the hole-digger's drive shaft with the auger head removed, or by means of an adapter it attaches to the not-removed auger head. The wrench is easily removed for re-use.

Each anchor consists of a galvanized-steel threaded rod screwed into the shank of a steel anchor helix. Both top and bottom of the helix are welded to the hub of the anchor by shielded-arc electric weld. *NP* 277.

Coiled Cords

A NEW type of self-retracting coiled cord is now available from the Patton-MacGuyer Company.

The cords are made with the highest grade tensel or copper conductors



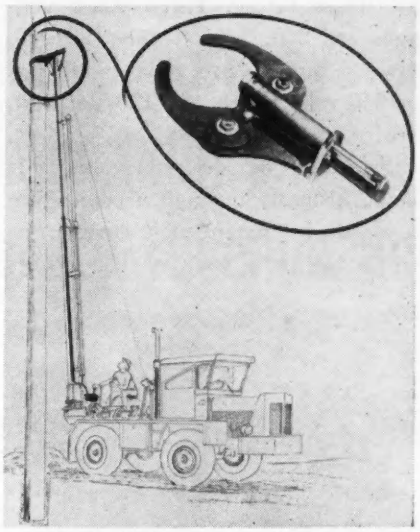
and have durable, nonmigratory polyvinyl chloride jackets. The PVC outer jackets are impervious to oils, grease, acids and fumes. The jackets will not attack varnished or lacquered surfaces nor discolor or mar other contacted surfaces or material.

These new cords are now available in 15 standard colors to match Tenite No. 1 and No. 2 Series Chips or may be matched to any other color or shade to meet specific requirements. The color of each P-M Coiled Cord is an integral part of the tough PVC outer jacket and will not wipe off, wear off, chip, scratch or fade. *Check NP* 278.

Pole Aligner

A NEW power operated pole aligner, designed to handle any size pole, has been announced by the Calavar Corporation.

The HYDRA-PIKE consists of two pincer-type arms mounted on a steel platform at the derrick head sheave. The arms or pincers are hydraulically operated. Hydraulic line retracting system is available for telescopic



booms, and diggers used throughout the utility industry.

Designed for one man operation, the unit eliminates need for pike poles to align utility poles. *Check NP* 279.

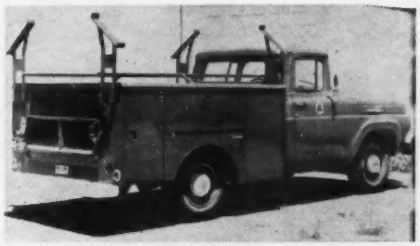
Utility Truck Body

A NEW telephone utility truck body, with removable and adjustable shelves, has been announced by Reading Body Works, Inc. The vehicle is used for telephone installation work.

Removable shelves provide storage for tools and materials, and give the operator option of changing the interior compartments to meet daily work requirements. The shelves, mounted on special die-formed steel brackets, can be removed or inserted without tools.

The Western Truck Equipment Co. supplied 30 extra shelf dividers. They fit into three-dimensional slots to permit optional spacing of storage bins for small parts, supplies and tools. The dividers slip into slots on one-inch centers without the need of tools.

Overhead angled ladder racks are installed on each side of the body, which is mounted on a standard Ford



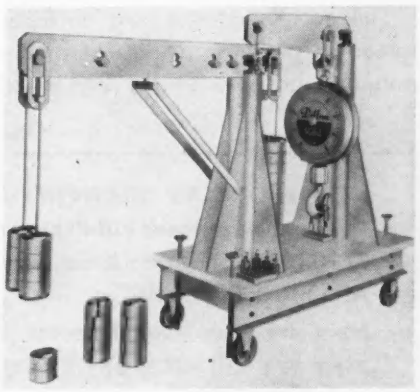
chassis. Double-paneled doors keep supplies in the compartments waterproof, and are equipped with slam-action locks. *Check NP* 280.

Calibrating Machine

W. C. DILLON & Company has developed a new calibrating machine.

On the extreme end of the long primary lever are hanger rods which support slotted, certified weights. The instrument or object to be tested is locked in place, and the yoke adjusted to the required length. Any amount of force can be applied by varying weights on the lever. A load may be left under tension indefinitely. 100% mechanical operation makes drift nonexistent.

By varying the relationships of the two levers and by resetting the pivot points, load ratios of 10, 20, 40, 75 and 100 to 1 are possible. Other



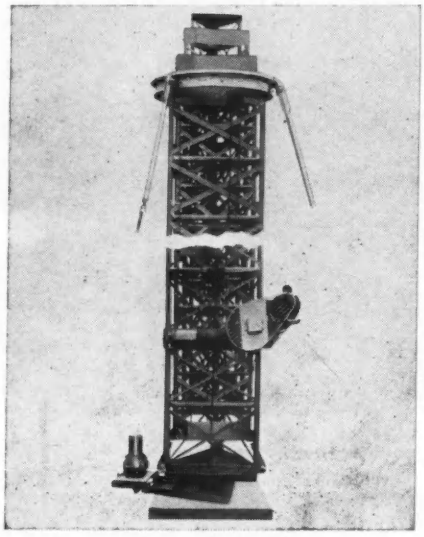
ratios can be provided for during manufacture.

Another refinement is the machine's null balancing system, which uses a mirror-and-lens arrangement to allow detection of weight changes of objects as small as a pinhead. *Check NP* 281.

Rotating Towers

A NEW line of rotating towers for the ham and industrial user has been announced by Tri-Ex Tower Corp.

Called the HZRN Series, these towers are self-supporting and feature



new roller guides for smooth, frictionless raising and lowering either by crank or motor. They also feature increased strength and greater weight that meet and surpass RETMA and UBC building standards, states the manufacturer.

The towers offer a new triple-coated finish for maximum weather protection: (1) iron phosphate rust-proof undercoating, (2) newly designed, durable epoxy resin prime coat, and (3) baked auto-type enamel finish coat.

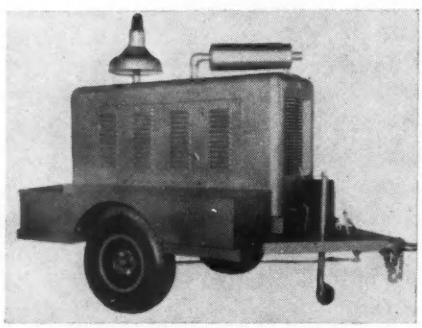
The complete tower and antenna rotate on twelve large, sealed precision ball bearings at the 20′ level, and on a heavy duty flange type self-aligning ball bearing at the base. It is possible to rotate the entire tower with the tip of a finger, claims the manufacturer. A Prop Pitch or other Gearhead Motor may be used as a drive unit. *Check NP* 282.

Standby Power Units

A NEW line of mobile power supply units with generators that deliver 3 phase or single phase alternating current has been announced by U. S. Motors Corp.

For use in communications systems, the engine generator package is available in three sizes — 15 KW 25 KW and 35 KW, 3 phase, 80% P. F. Each has a corresponding single phase rating. Three phase voltages are 240, 3-wire, and 120/208, 4-wire. Single phase voltages are 120 or 240 volt, 2-wire, and 120/240 volt, 3-wire.

Selection of desired voltage is made instantly through a connection box with interchangeable covers, one cover for each voltage. The covers



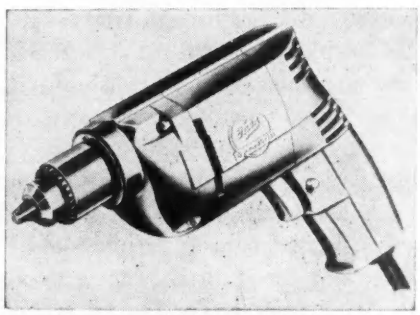
are connected to cables that terminate in plugs. Each plug is different, designed to fit only the proper receptacle.

All equipment is mounted on a flat-bed, two wheel trailer built for high speed mobility. Trailers have fenders, parking jack, dead stand, safety chains, stop and tail lights, directional lights, lunette hitch and fuel tank. Combination warning flasher and flood light on extendible stand, and either electric or tension safety brakes are optional equipment on the trailers. *Check NP* 283.

Portable Electric Drills

A NEW line of 1/4″, 3/8″, and 5/16″ portable electric SpeedDrills has been announced by SpeedWay Division of Thor Power Tool Company.

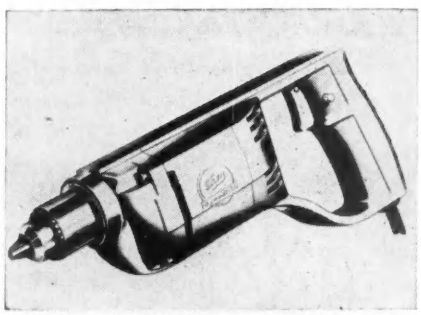
Features of the new SpeedDrills



Thor No. 326 SpeedDrill with Pistol-Grip.

include polished die-cast aluminum housing, precision geared chuck with key, 10-foot 3-conductor lead cord with adaptor, momentary contact switch with locking pin for continuous duty, and SpeedWay's universal series, wound motor for AC or DC use.

Both the spade-grip and pistol-grip



Thor No. 326-S SpeedDrill with Spade-Grip.

handles are new designed contoured to fit the hand comfortably and, with the SpeedDrills weighing only 4¼ to 4¾ pounds, give balanced control. *Check NP* 284.

NEW PRODUCTS' DEPARTMENT **9-1-59**
Telephone Engineer Publishing Corporation
7720 North Sheridan Road, Chicago 26, Illinois
Attn.: Dick Reynolds

Please send me additional information concerning the following New Products.

NP 274..... NP 275..... NP 276..... NP 277..... NP 278.....
NP 279..... NP 280..... NP 281..... NP 282..... NP 283.....
NP 284.....

NAME ..... POSITION.....

ADDRESS .....

COMPANY .....

CITY ..... ZONE..... STATE.....

IBM SERIES 50

Low-cost punched card system speeds customer billing, controls complete revenue accounting

The IBM Series/50—a complete punched card system—offers telephone companies the following advantages of low-cost data processing:

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Like all IBM data processing equipment, Series/50 may be purchased or leased. For more information, call your local IBM representative.

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Participants in "coffee break" at recent USITA Management Development Program are (from left to right without distinguishing rows): HODGEN O. PATRICK, Santa Monica, Calif.; JOHN LOUIS RUNKLE, Hickory, N. C.; ALLAN E. LINDEKUGEL, Fairmont, Minn.; JACK A. GROSSMAN, Rochester, N. Y.; BERLIN JOHNSON, Charlottesville, Va.; RICHARD LASHLEY, University of Kansas, Lawrence, Kans.; BENJAMIN KAUAHIKAUA, Honolulu, Hawaii; C. FREDERICK ROTH (back, partly hidden), New York, N. Y.; RUSSELL LOGUE, Casey, Ill.; E. D. WILKINSON (back, partly hidden), Tallahassee, Fla.; STEWART W. PHILLIPS, Erie, Pa.; DEWEY H. F. WONG (back, partly hidden), Honolulu, Hawaii; EDWARD G. NELSON, University of Kansas, Lawrence, Kans.; JOHN D. COOPER, Rochester, N. Y.; MARVIN E. WINANS, Everett, Wash.; FLOYD L. REYHER (standing on chair), Haxtun, Colo.; B. F. STALTER, Plymouth, Wis.; JOHN H. McHENRY, Jefferson City, Mo.; JOHN J. CLARKE, Monrovia, Calif.; WAYNE A. JOHNSON (standing on chair), Everett, Wash.; HERMAN GRAVES (front, wearing glasses), Brownwood, Texas; KENNETH A. YOUNG (back, partly hidden), Fort Dodge, Ia.; CHRIS B. HANSEN, Elkhart, Ind.; DICK F. PERLEY (back, wearing glasses, partly hidden), Des Plaines, Ill.; DUSTY KEMPER, Brownfield, Texas; JOHN R. YEAGER (bow tie), Harvard University, Cambridge, Mass., and CHARLES P. LAMM, Charlottesville, Va. — *Photo, courtesy of University of Kansas, Lawrence.*

Independent Tel. Executives Complete USITA Management Development Course

GRADUATES of the Management Development Program sponsored by the United States Independent Telephone Association for executives of Independent telephone companies were honored August 7 when they received certificates denoting successful completion of the intensive, concentrated four-week course from Dr. John H. Nelson, dean of the Graduate School of the University of Kansas, Lawrence.

The Program, designed to help executives do a more effective job in their current positions and to help them prepare for more challenging responsibilities, was planned by the Personnel Committee of the United States Independent Telephone Association and the University of Kansas School of Business, which presented the Program. Instruction by recognized authorities in the respective fields was within the areas of functions of administration, rate regulation and the American business climate.

Hugh A. Barnhart, president of the United States Independent Telephone Association, who is also president of the Rochester Telephone Company, Inc., Rochester, Ind., made the commencement address in which he stressed the growth of the Independent segment of the telephone industry by pointing out that, "At the end of World War II in 1945 the Independent telephone companies of the country had about 5 million telephone stations in service. Today they have well over 10 million. These companies provide telephone service to more than 10,700 cities and towns in rural areas — substantially more communities than those in which our Bell System friends operate, although our companies do not have as many stations as the Bell System. Our companies have gross operating revenues of more than $800 million, a plant investment of well over $3 billion, about 100,000 employes and upwards of 250,000 stockholders. And they are still growing."

"Personally, I feel that you are in the finest, most interesting and dynamic business in existence today," President Barnhart continued. "Although we have made significant strides over the years I believe along with many others the brightest era and largest opportunities lie ahead. He would be a pessimist indeed who failed to acknowledge that in our business as in others the best is yet to be. The prospect could well be called 'opportunity unlimited'."

With reference to education and management President Barnhart said, "Education is an ever continuing process. What you men have learned during your weeks of classes, lectures, studies and association is bound to influence your future and the future of many independent telephone companies as well. In the years which lie ahead you men who are graduating from this Management Development Program . . . will be moving on to greater and greater responsibilities."

At another point in his remarks President Barnhart gave emphasis to the fact that, "With people changing, management changing, technology

changing and service changing, it would be unforgiveable not to use every means in our power to improve our competence and at the same time our understanding of the world around us and our place in it. It seems inevitable that the need and demand for management talent will continue to increase. Managers must grow and it is they themselves who must do the growing. No one else can do it for them. Training and ever continuing education are essential. I am certain that you telephone men who are receiving certificates of achievement here today have a better understanding of your future places in the telephone world than you had before coming here."

Dr. James R. Surface, Dean of the K. U. School of Business and Director of the program, congratulated the participants on completion of the course. He also congratulated the Independent telephone industry for its foresight in establishing the program. He said in part, "In today's national preoccupation with science and technology, we are in danger of neglecting our great and growing need for capable management. By creation of this program, the independent telephone industry has demonstrated its desire to develop to the fullest the industry's capacity to manage resources and personnel for the mutual benefit of the American people and the telephone industry."

United Utilities Reports 28.5% Boost In Net Income

UNITED UTILITIES, Inc., Kansas City, Mo., has reported consolidated net income in first half of 1959 of $2,251,610, up 28.5% from the $1,752,637 reported for the same period in 1958. On the average number of common shares outstanding during the respective periods, the first half of 1959 earnings were equivalent to 98.4 cents per share as compared to 79.6 cents per share in 1958. Gross operating revenues for the six months ended June 30 totaled $20,548,631 as compared with $18,411,787 for the first half of 1958.

The United System gained 9,032 telephones during the first half of 1959 and converted 21 exchanges to dial.

PUREGAS
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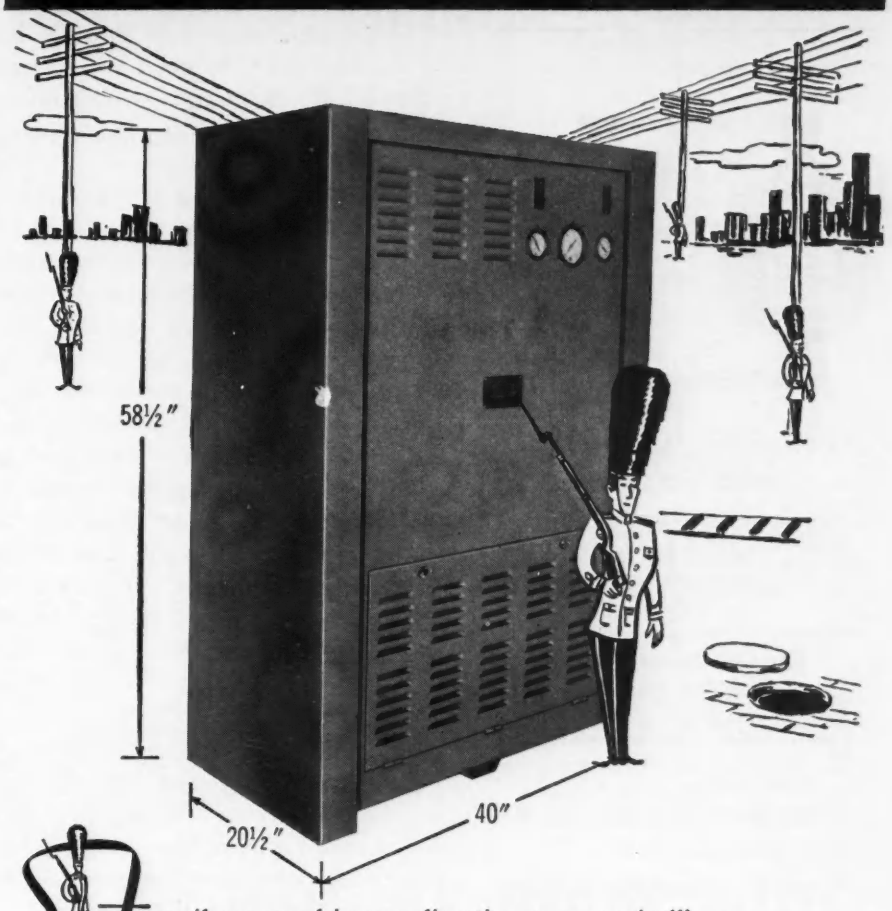
...like a sentry
at every post



For miles around in any direction, you can 'call' on PUREGAS. Dry air cable pressurizing by PUREGAS helps guard against subscriber service interruption and rising maintenance costs. PUREGAS installations protect capital investments while guarding profits. The PUREGAS Model 5000 Air Dryer (illustrated) is a self-contained unit, taking up less than 6 square feet of floor space and weighing only 950 pounds (approx.), yet it delivers up to 7000 cubic feet of dry air in a day.

Above or below ground, remember dry conductors serve better and dry cables last longer. Service goes up and maintenance costs go down when PUREGAS goes to work guarding all along the line.

New technical bulletin ready on "Why cables should be pressurized"—ask for your copy today.

PEC

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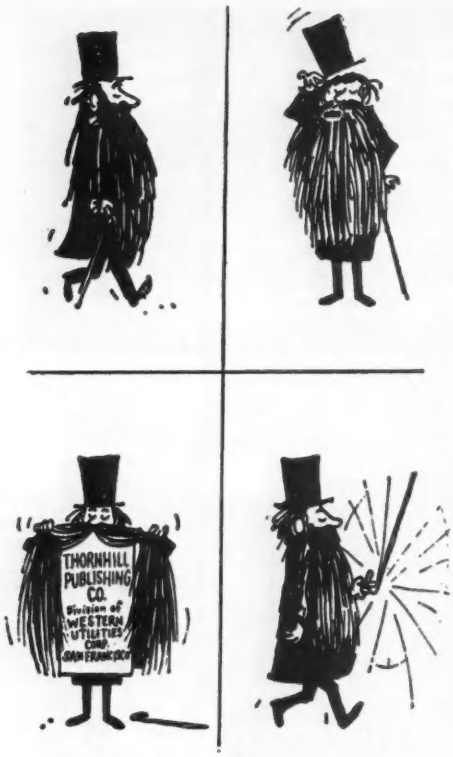

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STREET ADDRESS: .....
CITY .....
ZONE ..... STATE.....
*Prices apply to U.S. subscribers.
TEM 9-1-59.

"Credit"—An Important Word

(Continued from page 32)

the subscribers like it better if there is not too drastic a change in policy at one time.

The Work-Load

THERE ARE probably a dozen ways to divide up the work any credit policy must cover. Possibly the simplest way is to think about three divisions: (1) Securing credit information; (2) classifying subscribers; and (3) treatment.

Let's take each of the three divisions and talk about them. Securing credit information is a continual job. Information must be secured at the time a telephone is installed and should be checked out periodically thereafter. Some of the sources are:

(1) *Information secured at the time the application is made,* such as references, where employed, previous telephone service, home ownership (in rural areas this is of more value than in larger towns and cities), etc.

(2) Information from a credit bureau (if you have one in your town) either at time of application or later, or both.

(3) *The past payment record of the customer.* As time goes on, this will probably become your best single source of information.

(4) *Information secured during routine treatments.* For example in a checkup call to determine why a bill has been overlooked, you may learn the breadwinner in the family is sick, or has lost his job, or is divorced, etc. Such information may well warrant an immediate change of credit classification. If the past payment record of several months indicates a change in paying habits by a customer, many companies will make a checkup call, and ask leading questions to bring their credit information up to date.

(5) *Miscellaneous sources.* There are many sources of information but the following examples will suffice to prompt you to think up more sources for your particular company:

The area of town where the home is located; some areas will have a large preponderance of either good or bad credit risks.

The type of business engaged in or employed by. For example, a day laborer with a two-bit sawmill would not tend to have as good credit as a manager of a large retail store.

Also, we find that small grocery stores and small filling stations are usually some of our worst credit risks.

A company's own past records of discontinued service; we have numbers of applications from former subscribers, and our old records (filed alphabetically) give us a ready made credit record. Checking your own records also enables you to catch people who have run out on a bill and later try to get a phone without paying up.

The above is not a complete list of all credit information sources, but at least it will give you some idea of where to look in your own situation.

Credit Classifications

THE NEXT division in the work of carrying out a credit plan is to evolve some sort of a customer credit classification. Most companies work on some variation of the "A-B-C-D" system — like grades in school.

An "A" customer is one you don't have to worry about — come what may, you know he will pay, and pay promptly.

A "B" customer is a good customer but one who may require a reminder every now and then.

A "C" customer is average to lower than average.

A "D" customer is a bad credit risk.

These are very broad definitions and you can change them or add to them as you like and as may fit your operation.

The point is that there is certainly no point in treating an "A" customer (that is, checking up on him) if he hasn't paid some month by the 10th or 15th or whatever your payment date is. On the other hand, if a "D" customer doesn't pay, you definitely want something done about it.

Actually classification is a part of

treatment, but I have separated it because the classifying itself is something of a chore. First of all, when you set up a system, you have to classify every subscriber — which means you have to have some basis for classification. Then, after you get everyone classified, you have to bring those classifications up to date periodically if your system is to work.

One plan for getting started off is to classify everyone the same, and then, as you compile information on their payment records, reclassify them up or down according to their record. New customers on whom you can't get sufficient information may be treated the same way. For example, we start most new customers off as "C" customers, and later reclassify according to what we learn as time goes on.

Treatment obviously depends on classification, on your town's paying habits, and on your past policy, etc. If you have always been very lenient, you wouldn't want to get tough overnight. Nor would you treat a bad and a good credit risk the same way.

To give you some idea of what treatment might be, here is a specific example. Use this only as a very general guide, for it might be much too lenient in some cases, and much too tough a policy in others. So, simply as a very broad suggestion, you might consider the following:

"A" customers — no treatment at all.

"B" customers — if they haven't paid within 10 *days after they are supposed to pay, send a simple reminder;* 15 *or* 20 *days after make a telephone call;* 10 *days later a cut-out notice (and then cut-off when the notice says you will).*

"C" customers — if they haven't paid within 10 *days, a reminder note or phone call.* 10 *days later, send a cut-out notice (and again, cut-off when you say you will).*

"D" customers — if they haven't paid within 10 *days, send cut-off notice. Then* 10 *days later, discontinue the phone.*

When considering treatment, you should get a copy of the rules and regulations of your commission covering this subject. Some commissions

you expect more from a specialist ...you get more from

COMPARE Alphaduct with any other telephone drop wire! None can offer you a better balance of the physical and electrical properties necessary for dependable, long-life communication service.

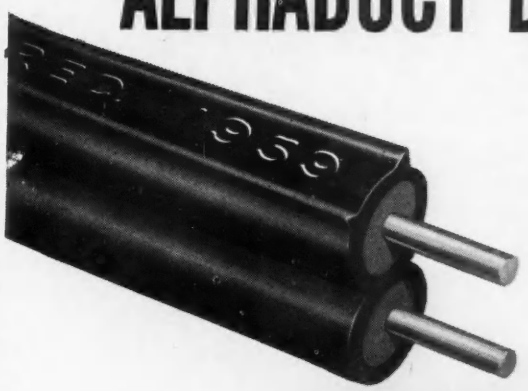
EXHAUSTIVE TESTING:
TANK TESTS—every coil of Alphaduct is submerged in water for voltage breakdown and insulation resistance tests.
COMPRESSION TESTS—Alphaduct drop wire is manufactured to withstand exacting crush resistance tests.
P-CLAMP TESTS—insures superior bonding of rubber to conductor and jacket to insulation...simulates field conditions.

EXCLUSIVE DATING FEATURE—every length of Alphaduct carries manufacturer's name, catalog number and date of manufacture...provides permanent service record of installation...proves Alphaduct's long-lasting durability.

CARTON PACKAGING—provides ease of handling... protects products during shipment and storage... simplifies inventory counts.

AVAILABLE IN THREE CONSTRUCTIONS (in both reinforced and non-reinforced) Twisted Pair, Parallel Type, and Dumbbell Type.

ALPHADUCT DROP WIRE



When you buy Alphaduct Drop Wire or any one of Alphaduct's complete line of telephone wires— you buy the know-how of the only real independent specialists in the insulated telephone wire field.

National Distributors
Automatic Electric Sales Corp.
Northlake, Illinois

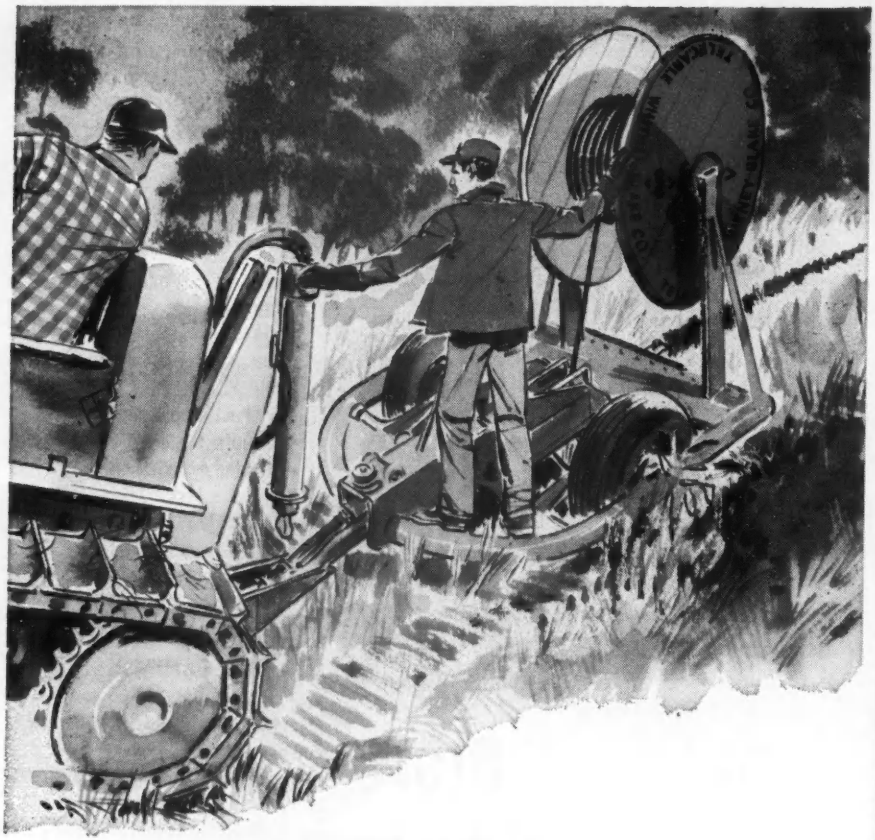
Leich Sales Corp.
427 W. Randolph St., Chicago, Ill.

WIRE AND CABLE CO.
NEW BRUNSWICK, N. J.
CHarter 9-8090

Regional Distributors
Buckeye Telephone & Supply Co.
Columbus, Ohio

The Lindsay Telephone Supply Co.
Cleveland, Ohio

Pankey Supply Co.
Charlottesville, Va.

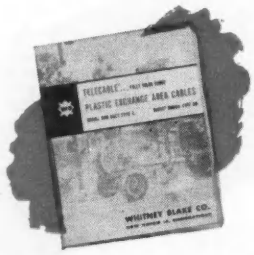


BURY IT
FORGET IT

Whitney Blake TELECABLE for Direct Burial, is made to last, to withstand the most "unfriendly" soil conditions and to give long, uninterrupted service underground.

It is quality that makes for true economy . . . that's why we can say "bury it and forget it."

WB TELECABLE — Type DB
Complies with REA
Specifications PE-23



Write for NEW
free Bulletin T-5

WB WHITNEY BLAKE CO.

Telephone CHestnut 8-5515
TWX: NH 84

NEW HAVEN 14, CONNECTICUT

are very broad in what they allow, how soon you can discontinue, what kind of notice you have to give, etc., but other commissions are very specific about those same things. Your policy, of course, must fit within the framework established by your commission.

Whether or not to take deposits, and in what amounts, must be your own decision. Again your commission will have rules about this. But in certain cases, deposits can protect you against substantial losses. Also remember that you may (at least in most states) ask for a deposit at any time — before installation, or later on, or both. That is, you may subsequently determine that what you asked for in the beginning is not enough to cover your possible losses and you may ask for an additional deposit.

In this connection (and again, in most states) you may ask for a telephone bill to be paid up at any time — you do not need to wait for your regular billing date, if you have reason to think you would incur a loss by doing so.

Here's one example from our own experience. We installed a telephone for a woman who had never had one before. Within three days she had run up a toll bill that exceeded $80. We called her and asked for payment, and found she did not know she had to pay for long distance. She was aghast, and thankful we had called the bill to her attention so soon. We arranged with her to pay up so much a month. We saved ourselves a big loss, and we made a friend, all at the same time.

If you do set up a credit policy, go slow. Use a huge amount of tact and patience. Be careful of the wording in your treatment calls and notes. And don't be afraid to change the policy or some part of it, if it doesn't work right. — *Bill Corman.*

You are invited . . . to tell our authors about problems on which you'd like to have an opinion.

While we don't claim to have all the answers, we'll welcome the opportunity to discuss as many as possible in TE&M's regular departmental columns . . .

"The Coming Revolution"

(Concluded from page 34)

a person's lips move on the screen and hearing the actual sound emanate, without causing viewer annoyance.

Some of the other types of special transmission, such as data transmission, telephoto, etc., require even closer tolerances and greater band width requirements. Since these facilities transmit information through the medium of pulses, any change in pulse shape, caused by the transmission path, represents a loss in the information content of the pulse. In order to bring our cable facilities into shape for such transmission, it is necessary that special treatment be applied to the bare cable pairs. The most often used equipment, for such treatment, is termed an "equalizer." — *C. D. Ehinger.*

References:

(1) "Recent Developments in Four-Wire Switching of Long-Distance Telephone Circuits," by Imre Molnar, Ph. D.; Dec. 1956, General Telephone Technical Journal.

(2) "Information Theory and Modern Communications," Lenkurt Demodulator, Vol. 8 No. 6.

(3) "Equalization of Aural and Visual Delay," May, 1959, Bell Laboratories Record.

EDITOR'S NOTE: — *In coming issues, Mr. Ehinger will present "Lab Report" articles on a Portable Hybrid Test Set and a Program Equalizer. These items are typical of the concept and changes which will be a part of "The Coming Revolution."*

Book Reviews

"The Atlantic Cable," by Bern Dibner; 96 pages; Burndy Library, Norwalk, Conn.; 1959; *in cloth,* $3.50; *in paper,* $2.50.

For the student of international cooperation, "The Atlantic Cable" chronicles one of the first large-scale Anglo-American undertakings. For the historian of useful arts, it tells how leading scientists and engineers pooled theory and practice to forge another link in worldwide communications. For all who thrill to the suspense and conflict that lie behind every great achievement, the book is rich in real-life drama.

All five cable expeditions are graphically summarized by a special chart showing the length of cable laid on each attempt, the ships, key personnel, and sponsoring companies, and characteristics of the cables. For the serious student, "The Atlantic Cable" includes a bibliography of 60 books and pamphlets, published from 1857 to 1910 and now in the Burndy Library.

On the other side of the gatefold insert carrying the summary chart is reproduced an 1858 "Map of the Submarine Telegraph between America and Europe," one of many contemporary pamphlets, books, songs and poems capitalizing on interest in a technical achievement that fired popular imagination as strongly as conquest of space today.

"Linear Network Analysis," By Sundaram Seshu and Norman Balabanian; 571 *pages,* 6 *x* 9, $11.75. *Order from Educational Division, "Telephone Engineer & Management," 7720 Sheridan Road, Chicago* 26, *Ill.*

This book develops the foundations of network theory carefully, smoothing out the transition between (a) steady-state and transient responses, (b) time and frequency responses, and (c) analysis and synthesis.

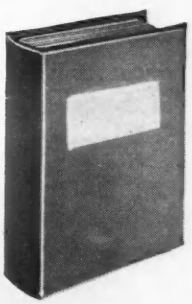
The authors begin with fundamentals, e.g. Kirchhoff's laws, the number of independent equations, and direct the reader to the thresholds of some of the most advanced concepts in network theory, including network synthesis, realizability conditions, and control systems.

The book contains numerous illustrations, and sample problems accompany each chapter.

Sound transmission theory plainly introduced . . with application to the ocean

HERE is an outstanding book that makes available much needed up-to-date information on sound transmission theory. All steps necessary for a clear understanding of the subject are covered. The book applies the theory to a description of sound transmission in the ocean. Wherever possible, the physical explanations of the theoretical results are given. The full range of important subjects from the fundamental relations and general theory of sound transmission, transmission in shallow and deep water, to the subject of reflectivity and the influences of some of the attenuation processes on sound propagation is presented. Mathematical derivations are developed in detail. Modern advances in the field are included with emphasis on development since 1938.

INTRODUCTION TO THE THEORY OF



SOUND TRANSMISSION

By C. B. Officer

The Rice Institute and Woods Hole Oceanographic Institution

284 pages, 6 x 9, 191 illus. $10.00

Partial listing of subjects covered

- fundamental solution of the wave equation
- adiabatic and isothermal conditions and the velocity of sound in sea water.
- ray characteristics for velocity of a function of one space coordinate only
- development of solution in terms of normal modes
- normal incidence to one and two boundaries
- source and receiver at the ocean surface
- near-surface transmission
- reflection from an elastic medium
- normal incidence to a corrugated boundary
- losses due to thermal conduction

Chapter titles:

1. Fundamental Relations
2. General Theory
3. Transmission in Shallow Water
4. Transmission in Deep Water
5. Reflectivity
6. Attenuation

Educational Division,
Telephone Engineer Publishing Corp.,
7720 N. Sheridan Rd., Chicago 26, Ill.

Please send me a copy of Sound Transmission by C. B. Officer. My check for $10 is attached.

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Serviceable for all around uses. Standard everywhere.
NYLON
Smooth texture, easy to handle. Preferred for switchboard use.
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Very popular because easy to keep clean. Moisture and grease proof.

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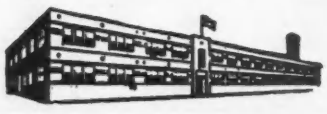
the WORLD'S FINEST

...for every purpose!
...for every instrument!

Take your choice—Neoprene, Nylon or Cotton. They're all high quality cords made in accordance with Runzel high standard of quality. We carry large stocks of cords to meet every need. Our geographical location means Quick Service.

RUNZEL CORD & WIRE CO.

4723 W. MONTROSE AVE. • CHICAGO 41, ILLINOIS



Murphy, Drummond and "Red" Motley To Address 62nd Annual USITA Convention

THREE MEN of national prominence from outside the telephone industry will address the 62nd Annual Convention of the United States Independent Telephone Association at Chicago, October 11-12-13-14. The three talented, well-known figures, each of whom has left his imprint indelibly upon the American scene and whose forensic abilities have been recruited by the Association to inform and delight the men and women of Independent telephony are:

George Murphy, stage and screen star, public relations man of the motion picture industry and vice president of Desilu Productions, Hollywood, California.

Roscoe Drummond, famous syndicated columnist and Washington bureau chief of the New York Herald Tribune.

Arthur "Red" Motley, publisher of Parade, the Sunday newspaper magazine, and master salesman.

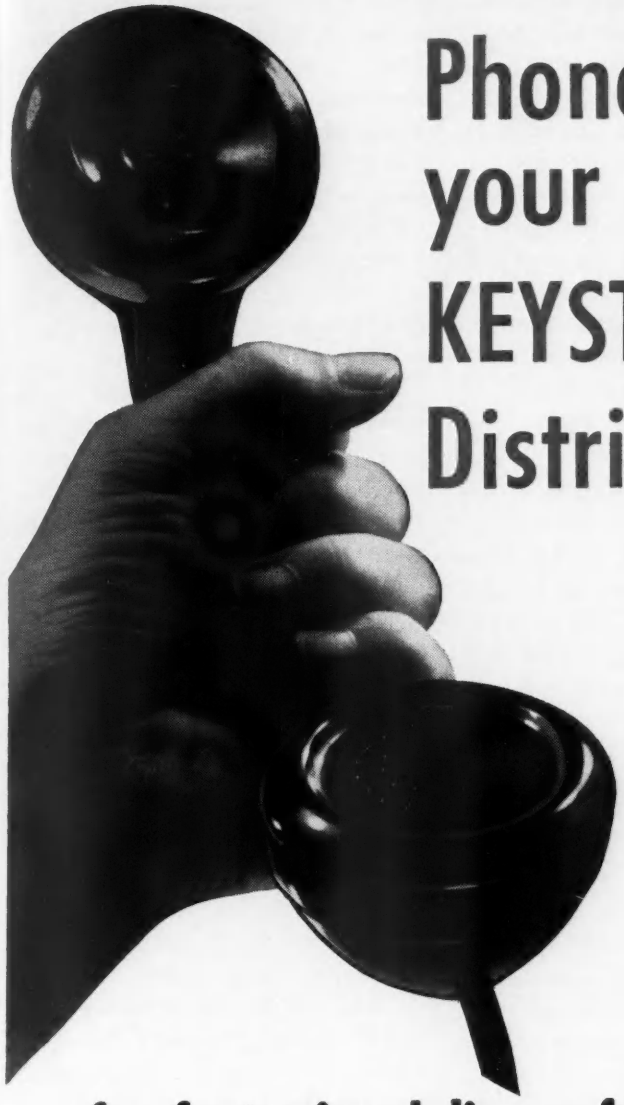
In addition to starring in countless stage and screen productions, George Murphy has been active in many ways on the national scene. In 1953, he was the entertainment director for the Presidential Inauguration in Washington. On two occasions he was a delegate to the Republican national convention. He is a member of the Screen Actors Guild and past president of the Academy of Motion Picture Arts and Sciences. In 1950 he received an Academy Award. During recent years he has devoted a large portion of his time to public speaking and public relations activities.

ROSCOE DRUMMOND, Washington Bureau Chief, New York Herald Tribune.

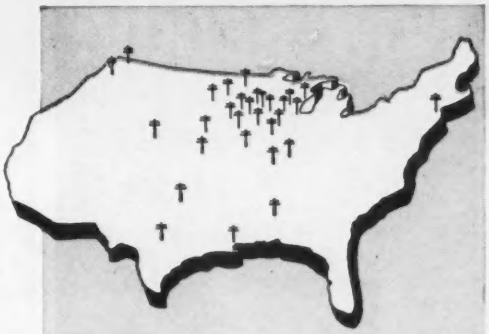
Considered one of the country's leading news interpreters, Roscoe Drummond is noted for the independence and objectivity of his reporting. Widely respected among his fellow-newsmen, he reaches a large segment of the American public through his four-times weekly column "Washington," which appears

GEORGE MURPHY, vice president Desilu Productions.

ARTHUR "Red" MOTLEY, publisher, "Parade" magazine.



Phone your KEYSTONE Distributor



. . . for fast wire delivery from stock

When wire is needed, call your Keystone Wire Distributor. His stocks are well supplied. He can give you prompt delivery in any emergency.

Keystone Telephone Wire is available in a full range of Class A line wire in 50M, 85M, and 135M tensile strengths, and meets the specifications of A.S.T.M., A.T.&T. and is approved by R.E.A. Galvanized bond, tie and construction wire are also available at your Keystone Distributor.

A phone call will bring you fast delivery . . . contact your Keystone Distributor for your next wire need!

KEYSTONE STEEL & WIRE COMPANY, Peoria 7, Illinois

KEYSTONE

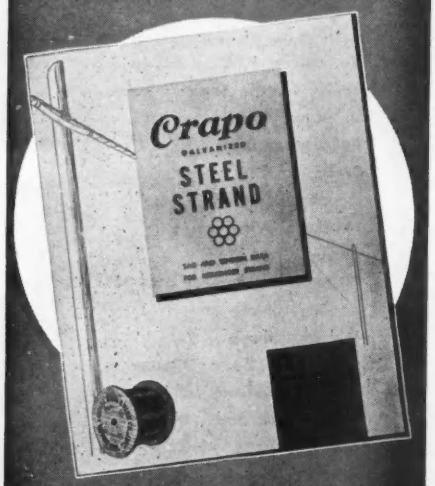
Wire for the Telephone Industry

British Ropes Canadian Fact., Ltd.
Vancouver, B. C., Canada
Crescent Electric Supply Company
Dubuque, Iowa
Burlington, Iowa
Cedar Rapids, Iowa
Davenport, Iowa
Madison, Wisconsin
Mason City, Iowa
Ottumwa, Iowa
Peoria, Illinois
Quincy, Illinois
Rapid City, South Dakota
Sioux City, Iowa
Sioux Falls, South Dakota
Spencer, Iowa
Sterling, Illinois
Waterloo, Iowa
Dakota Electric Supply Co.
Fargo, North Dakota
Joslyn Mfg. and Supply Co.
Birmingham, Alabama
Chicago, Illinois
Dallas, Texas
New Orleans, Louisiana
New York, New York
No. Kansas City, Missouri
Oklahoma City, Oklahoma
Omaha, Nebraska
St. Paul, Minnesota
Kingsport Electric Co., Inc.
Kingsport, Tennessee
Line Material Industries
Milwaukee 1, Wisconsin
Marshall-Wells Canadian Companies, Ltd.
Winnipeg, Manitoba, Canada
The Mine & Smelter Supply Co.
Salt Lake City, Utah
Nelson Electric Supply Co.
Dallas, Texas
Lubbock, Texas
Jack Pruzan Co.
Seattle, Washington
Southern Electrical Corp.
Chattanooga, Tennessee
Suttle Equipment Company
Chicago, Ill.
Lawrenceville, Illinois
Tennessee Valley Electric Supply Co.
Nashville, Tenn.
Wheeler Lumber Bridge & Supply Co.
Norfolk, Nebraska

. . . by the makers of famous Red Brand Fence

Now Ready!

Sag and Tension Data For Strand When Supporting Telephone Cable

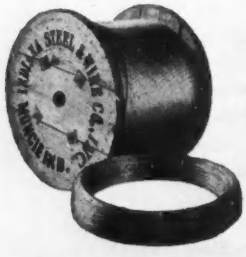


WRITE FOR THIS NEW MANUAL!

Those who design, build and maintain aerial telephone cable lines will find the technical information in this manual both pertinent and useful.

The sag and tension data cover three sizes of "Utilities Grade" strand when used as messenger to support plastic-sheath or lead-sheath cable. These data will be helpful in determining the size of strand to be used for a particular weight of cable and span length, and in answering other questions relating to design problems.

This Manual will be mailed without obligation to all interested telephone men. Ask for Manual No. MS-58.



Crapo Galvanized Steel Strand (for both messenger and guys) is available in all standard sizes and grades and in Class A, B and C coatings.

INDIANA

STEEL & WIRE CO., INC.

Muncie, Indiana

in over 100 newspapers from coast to coast.

Mr. Drummond, often called "Mr. Washington Correspondent," began his distinguished career in journalism as a staff reporter with the Christian Science Monitor in 1924. During one of his assignments as Far Eastern correspondent for the Monitor, he made a grand journalistic tour of Asia. Thoroughly acquainted with Europe also, he recorded on the spot many of the biggest news stories of the era — among them are Hitler's rise to power and the decline of the League of Nations. He is also credited with many exclusives.

Red Motley, who will tie in his address on salesmanship with our industry's fast accelerating telephone marketing and sales program, is a man who practices what he preaches. For 45 of his 58 years he has been selling something to somebody. He has become recognized as a salesman's salesman. In fact, in 1954, he was named one of "America's Twelve Master Salesmen." Red learned at an early age that even if you do "build a better mousetrap," you still have to let people know about it. In addition to supervising Parade's publishing activities, Red Motley travels an average of 100,000 air and rail miles each year to address between 100 and 125 different gatherings. He is a director and vice president of the Chamber of Commerce of the United States and a member of the board of directors of the Advertising Federation of America.

In addition to this trio of famous personalities, other interesting timely, instructive and worthwhile addresses will be made by leaders of the industry, including USITA President Hugh A. Barnhart and USITA Executive Vice President Clyde S. Bailey.

There will be six different technical conferences — REA Borrowers, Accounting, Commercial, Engineering, Plant and Traffic — opening with the REA Borrowers conference on Sunday afternoon, October 11, which will be addressed by Administrator David A. Hamil of the REA. Other conference speakers will include Walter G. Wright, Vice President-Operations, General Telephone & Electronics Corporation, New York; Paul Weiland, member of the Public Utilities Commission of Ohio; Frank S. Barnes, Jr., Rock Hill, South Carolina; C. K. Collins, Assistant Vice President, American Telephone & Telegraph Company, New York; Frank Morris, Stromberg-Carlson Company, Rochester, New York; Don Childers, United Utilities, Inc., Kansas City, Missouri; F. W. Hamper, Operating Vice President, General Telephone Company of Ohio; and a host of others.

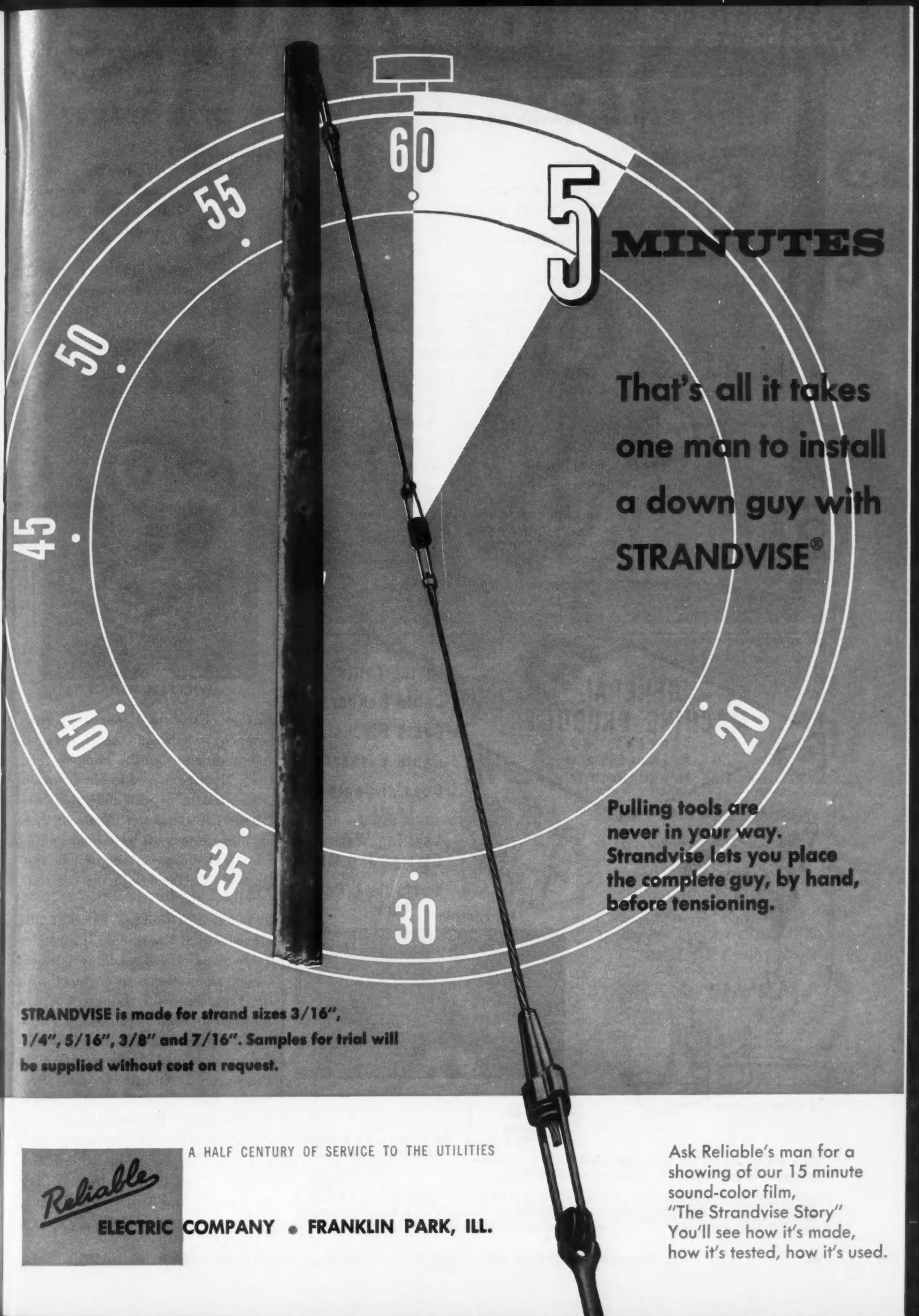
It is apparent from a look at the advance copy of the still uncompleted program that the various conferences will be timely, topical, informative. Here are just a few of the subjects, taken at random, to be discussed: Budget Responsibilities of All Management Levels, Adequate Audit Trials in Mechanized Accounting, The Shape of Things To Come in Directory Publishing, New Developments in Toll Credit Card Uses, Transmission and Communication Improvement, Number Service Planning, Telephone Research and Development, Cable Pressurization Methods, The What and Why of Traffic Engineering, Customer Relations in the Traffic Department.

There will, of course, be the usual social and entertainment features, including the annual banquet scheduled for Tuesday night, October 13, in the Grand Ballroom of the Conrad Hilton Hotel, the Independent Telephone Pioneer Association's meeting, which this year will feature the Illinois Bell Chorus, to say nothing of the two floors of eye-opening exhibits by the industry's manufacturers and suppliers. These exhibits, always one of the most interesting features of the convention, this year give promise of outdoing all previous displays.

John M. Bigbee Named To Succeed E. Wm. Smail

UNITED Telephone Co. of the Carolinas, Inc., Southern Pines, N. C., has announced the appointment of John M. Bigbee as commercial superintendent, succeeding E. W. Smail, who was previously named assistant general manager. He will have headquarters at Southern Pines, N. C.

Bigbee joined United in April,


60
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5 MINUTES
That's all it takes one man to install a down guy with STRANDVISE®
Pulling tools are never in your way. Strandvise lets you place the complete guy, by hand, before tensioning.
STRANDVISE is made for strand sizes 3/16", 1/4", 5/16", 3/8" and 7/16". Samples for trial will be supplied without cost on request.
A HALF CENTURY OF SERVICE TO THE UTILITIES
Reliable
ELECTRIC COMPANY • FRANKLIN PARK, ILL.
Ask Reliable's man for a showing of our 15 minute sound-color film, "The Strandvise Story" You'll see how it's made, how it's tested, how it's used.

MEMORANDUM

TO: Company Managers

When you buy rebuilt products,
buy them where they were made!

For rebuilt TELEPHONES
SPRING JACKS
LAMP JACKS
LINE RELAYS
CUT-OFF RELAYS
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RELAY SPRING COMBINATIONS
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These dependable Kellogg products have all been rebuilt with original factory parts, with the same service and inspection used on new equipment.

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GENERAL MACHINE PRODUCTS COMPANY, INC.
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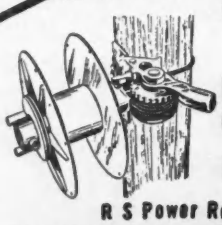
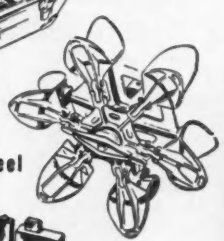
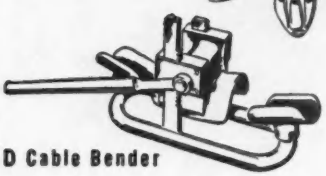
Aerial Tents
Cable Benders
Cable Blocks
Cable Lashers
Coaxial Cable Tools
Lashing Wire Clamps and Grips
Portable & Power Reels

Pressure Testing Kit


R S Power Reel


C R Power Reel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Designed by Graybar

Special Purpose Tools To Specifications
Literature on Request

Over 450 various items of Line Construction Tools, Maintenance & Pressure-Testing Equipment in stock for immediate Shipment

SPECIALIZED COMMUNICATIONS EQUIPMENT SINCE 1918

GMPCO

1952, as equipment supervisor in the Beaufort, S. C., district. In October 1958, he was named assistant commercial superintendent.

William W. Ege Dies

WILLIAM W. EGE, 59, prominent businessman and steel company executive, died August 8, at his residence, 413 Morrison Drive, Mt. Lebanon, Pa.

Widely known in the electrical power, railroad, and communication industries, Mr. Ege was vice president in charge of Copperweld Steel Company's wire and cable division and a director of the company. In 1943, Mr. Ege moved to Mt. Lebanon to take charge of wire and cable sales for the entire country. Prior to that, he was western district manager of sales with headquarters in Chicago. He was associated with the company for 33 years.

WILLIAM W. EGE

A native of Chicago, Mr. Ege was a graduate of the Illinois Institute of Technology. He started his business career as an electrical engineer with the Commonwealth Edison Co. and resigned in 1926 to join Copperweld.

Mr. Ege was a member of the Mt. Lebanon United Lutheran Church, Pittsburgh Athletic Association, South Hills Country Club, Illinois Athletic Club, and the American Institute of Electrical Engineers.

He is survived by his widow Mrs. Carolyn Ege, two children William W. Ege, Jr. and Mrs. Carol Sikkema, and seven grandchildren.

Has your toll timing system kept pace with these CALCULAGRAPH IMPROVEMENTS?

NEW COLOR-CODED HANDLES

This "visual aid" to better accuracy is a big help to busy operators—excellent for trainees, too. These new handles in color—green for start, red for finish, can be installed in minutes.

NEW SETBACK HANDLE

Now you can use ANY SIZE toll ticket—in operated position handle cannot damage toll ticket. This new feature permits Calculagraph to be used with any card system.

NEW 60-MINUTE DIAL

Busy operators can now handle more calls more efficiently because there's no need to depend on memory or manual computations on long conversations. Assures you, too, of all charges due on every call.

Check your own switchboard now. If you don't have all these Calculagraph improvements, it's time to modernize and incorporate these benefits into your toll timing system.

Your busy operators will like these easier-to-use color-coded handles; the 60-minute dial will eliminate possible human errors in recording long conversations, saving you "lost-time" dollars; and, you will like the flexibility in card sizes permitted by the set back handle. They all add up to faster, easier, more accurate toll time recording.

Call your Calculagraph distributor today. He'll be glad to discuss your modernization plans with you.

FOR LONG-TIME CALCULAGRAPH USERS ONLY

If you are now using the old "round-type" Calculagraphs, you can easily convert to the rectangular Model 33 (shown here) with the convenient adapter plate that requires just a few minutes to install.

CALCULAGRAPH Company

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MANUFACTURERS OF ELAPSED TIME RECORDERS FOR OVER 65 YEARS

WHAT'S NEW AT

SUTTLE

NEW, FREE LITERATURE

HERE IS your guide to more profitable operations. We are pleased to make this valuable information available to you free—just check the items you desire and mail the list to us today. (We will send your selection by return mail.)

- ☐ SUPPLY CATALOG — thousands of priced items available from Suttle.
- ☐ MIDGET (latest issue) — the humor magazine of the independent telephone industry.
- ☐ TELEPHONE BOOTH LITERATURE — indoor & outdoor, short and full length — steel, aluminum, wood & plastic — including Tel. Booth Std. Finish color card Price list.
- ☐ DRIVE-UP — WALK-UP BOOTH SERIES — for highest pay station revenue.
- ☐ SUTTLE PLUGS, JACKS, PLATES, BRACKETS for flush or non-flush instrument installation.
  SUTTLE INDICATORS — SIGNAL LIGHTS at subscriber stations.
- ☐ SUTTLE BISECTOR, for locating guy wires.
- ☐ SPRING TENSIONED PLUG SCREWDRIVER.
- ☐ PORTABLE DEHUMIDIFIERS freon type, for unattended exchanges and central offices.
- ☐ SUTTLE PORTABLE DUST COLLECTORS — exchange use.
- ☐ 3-WAY SWITCHING KEYS for subscriber use.
- ☐ PRINTED TELEPHONE FORMS stock list — including prices.
- ☐ TELEPHONE DIRECTORY SAMPLES — and plan details.
- ☐ REFINISHED TELEPHONE BOOTH BARGAINS.
- ☐ 6" LOUD RINGING BELLS — any frequency.
- ☐ WIRE & CABLE REELS & ACCESSORIES catalog.
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Sam H. Shutt Dies

SAM H. SHUTT died August 7 in a Sherman, Texas, hospital after a short illness.

Mr. Shutt was born November 8, 1882, near Forth Worth. His father was a Methodist circuit rider and Mr. Shutt's early education was obtained wherever he could find it, in the towns and villages on his father's circuit, but in spite of these difficulties he managed to enroll as a freshman in Southwestern University at Georgetown, Texas, at the age of 15.

SAM H. SHUTT

During the previous year he had become interested in a construction crew installing a telephone exchange at Stephenville and obtained a job as an operator in the completed exchange. From that time on, his main interest in life was the telephone business, even though during the next two years while he attended the University he could spend only his vacations working for the telephone exchange at Georgetown.

Mr. Shutt left college in his junior year; and from that time until he entered the service of the Signal Corps in 1917, he worked in various capacities for various telephone companies, both Bell and Independent, throughout central Texas, always leaving for a better job or being transferred to a more responsible position.

After leaving the Army, Mr. Shutt returned to an earlier position as local manager of the telephone company at Temple, Texas, but was soon transferred to Waco as general superintendent of the Texas Long Distance Telephone Company, an Independent long distance company. He continued in this position until August 1, 1931, when he was transferred to Sherman as general manager of the Texas Telephone Co. He retired from his duties as vice president and general manager of Texas Tel. Co. in 1953.

Mr. Shutt served as chairman of the Commercial Committee of the USITA, as vice-president and a director of the Texas Telephone Association, president of the Independent Telephone Pioneer Association during 1939-1940, and president of the Texas ITPA Chapter of that group.

Survivors are his widow, and a sister, Mrs. Bonnie Uttz of Fort Worth.

Dr. A. B. Smith Dies

DR. ARTHUR BESSEY SMITH, research engineer, inventor and long time pioneer in communications, died Aug. 4 at the age of 84.

Dr. Smith was an alumnus of the University of Nebraska, from which he received a B. S. in E. E. degree.

During early years of his career he worked for various telephone companies in Nebraska, Iowa and New York state. From 1905-1909 he taught telephone engineering at Purdue University. He received the Purdue University Electrical Engineering degree in 1907.

Joining Automatic Electric in 1909 as assistant to the sales manager, Dr. Smith was soon transferred to the research department and devoted his professional career to research and development. He was granted 31 patents by the U. S. Patent office in such fields of telephony as sub-station circuits and apparatus, transmitters, receivers, toll dialing, voice frequency repeaters, trunking systems and special services. He was the inventor of the booster telephone circuit.

Dr. Smith established the Automatic Electric Training School in 1912, serving as its director while continuing his research and develop-

Please turn to page 69

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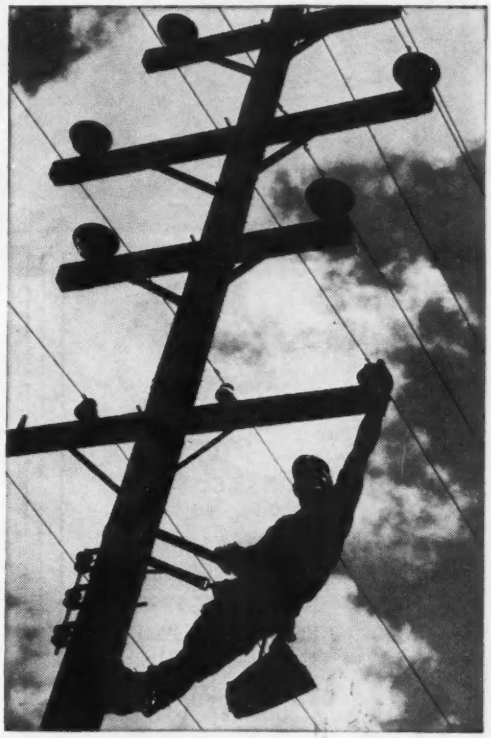

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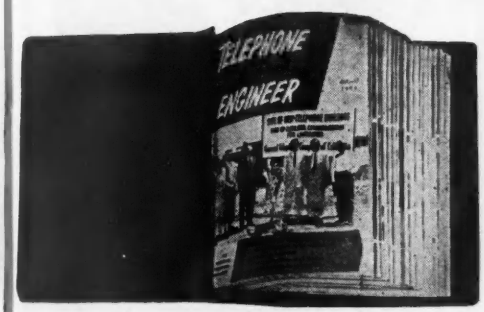

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ment activities. He received the degree of Doctor of Philosophy in Physics from Northwestern University in 1926, based on his investigation of the phenomena underlying the slow acting relay. Dr. Smith was the author of many works, articles and technical papers on automatic telephony, telephone switching, transmission and allied topics, and was co-author with W. Lee Campbell of the book *Automatic Telephony*.

In 1934, Dr. Smith was elected a vice president of Automatic Electric Laboratories, Inc. in which capacity he served until his retirement in 1955. He received the Talbot G. Martin Award in 1943 and the honorary degree of Doctor of Engineering by the University of Nebraska in 1950, both in recognition of his many contributions to the field of communications.

Dr. Smith was a Fellow and Life Member of the American Institute of Electrical Engineers, a Fellow in the American Association for Advancement of Science, Member of the American Physical Society, Member of the Western Society of Engineers, Member of the Institute of Radio Engineers, Member of the Independent Telephone Pioneer Association and a Life Member of the Telephone Pioneers of America.

He is survived by a son, Howard H.; a daughter, Mrs. Norman Lumley, three grandsons and two great-grandsons. His wife, Cora E. Smith, died in January of this year.

Lime Springs Tel. Acquires Two Iowa Exchanges

LAST MONTH the Lime Springs Telephone Co. announced it had acquired a major interest in the Plymouth (Ia.) Telephone Co. and the Rock Falls (Ia.) Telephone Co.

The acquired systems will be converted to dial and the service area of the two towns will be combined and the entire area served from the Plymouth exchange. The estimated cost of the proposed improvement program is over $100,000.

C. C. Pearce, Riceville, president and general manager of the Lime Springs Telephone Co., is in charge of the project.

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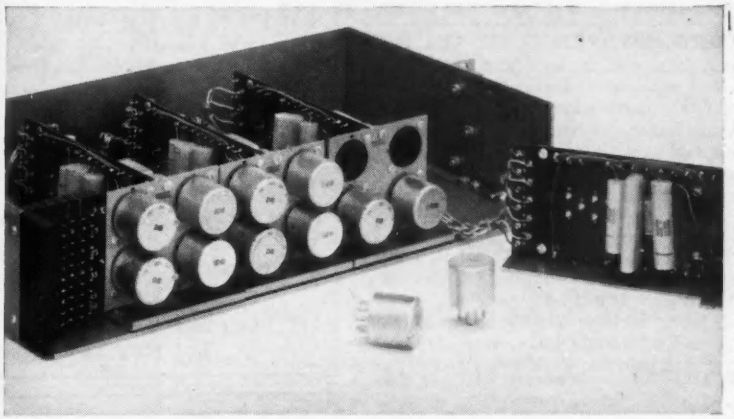

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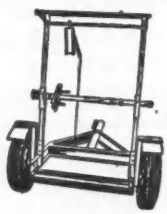

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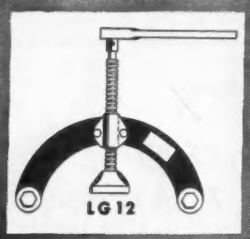

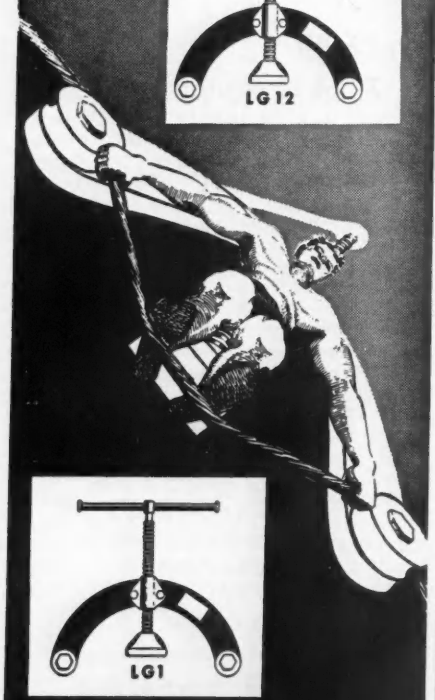

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Mahoney Named Sales Mgr. At Warren Mfg. Co.

TIMOTHY L. Mahoney has recently been appointed sales manager of the Warren Mfg. Co., Inc.

Mahoney joined Warren as a telephone field engineer in 1958. He began his telephone service with the New England Tel. & Tel. Co., and was later employed as a power engineer for Kellogg Switchboard & Supply Co., of Chicago.

His duties will involve marketing of the present Warren Electronic Power Equipment plus new product research and market analysis.

A. B. Chance Co. Sells American Crossarm & Conduit Co.

A. B. CHANCE CO., Centralia, Mo., has sold its American Crossarm & Conduit Co. subsidiary to Frederick A. Masterson & Associates, Chicago.

Included in the sale were plants in Gainesville, Fla.; Schiller Park, Ill.; Minneapolis; North Kansas City; Danville, Pa., and Chehalis, Wash. These factories, Masterson said, employ about 150.

American Crossarm & Conduit was purchased by Chance early in 1957 in an exchange of stock. In 1958 the Chehalis, Wash., plant was purchased from Joslyn Manufacturing & Supply Co.

The plants make wood crossarms used on power and telephone lines and accounted for about 8% of Chance's assets and 10% of annual sales, F. Gano Chance, president, said. In 1958 Chance's assets were $13,502,785 and sales were $20,694,-775.

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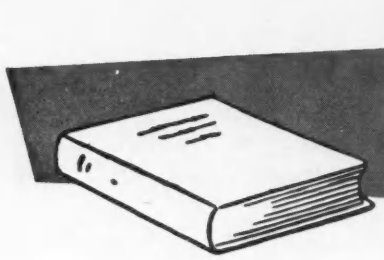


THE BACK OF THE BOOK

By JOHN G. REYNOLDS

"Big — And Still Growing"

THERE ARE 7½ pages of government listings in the Washington, D. C. phone book now, but Congress just doesn't want to call it quits.

About 40 new executive agencies to regulate, protect, advise and assist us are proposed in bills introduced this session.

Nine would be new departments with cabinet status, plus an assortment of agencies, offices, administrations, services, commissions, councils and boards.

The National Grammar Commission is offered to put our language in shape and to produce a "U. S. Official Dictionary."

The Commission on Continuing Prosperity would examine the problems of depressed regions and displaced workers.

The Department of Peace would, presumably, be a softer-speaking version of the Department of State.

The Department of Consumers would worry about things like the cost of living.

And the Freedom Commission would figure out how to counteract the Communist conspiracy.

Few of the 40 stand any chance of approval in Congress, which is fine with Rep. Bow (R., Ohio).

To him, he told his constituents in a newsletter, they're just "more people working for the federal government, interfering with, controlling and pestering more citizens, at greater expense to everyone."

Rabbit Food?

WHO SAYS lettuce and carrots are the mainstay in rabbits' diets? A Bell repairman in Midland, Michigan, found out different.

In repairing a home phone, he found the inside wire nibbled away from the wall to the telephone, not only on the main instrument but on the extension as well. You guessed it, the culprit was the family's pet rabbit.

"A Worthy Badge"

A SMALL memento of Alexander Graham Bell recently placed on exhibit in a Maryland museum has an unusual history, reports the *Southwestern Bell Telephone News.*

In July, 1884, Mary Shellman was manager and operator of the first telephone exchange in Carroll County, Maryland. The Shellman family was prominent in the state and one day the governor brought Bell to their home for lunch.

But Bell arrived early and caught everyone unawares. He dropped in to see the switchboard and found Mary at work. In the course of their conversation, Mary referred to the worn-out condition of her sleeve as "the operators' badge."

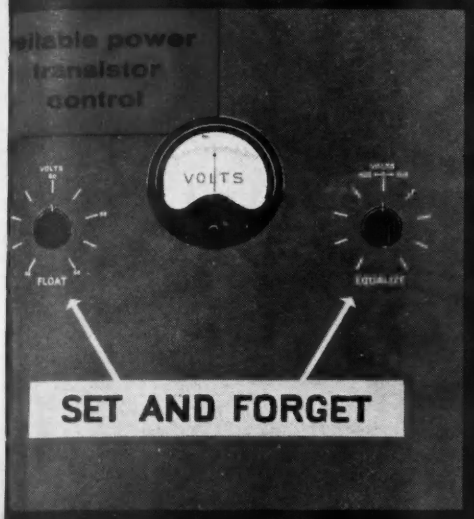
Bell maintained an operator should have a more worthy badge, and shortly after his visit he sent one — a miniature magneto telephone in gold with tiny bells on top of it. It was set on jet with a cord of twisted gold. Mary wore it until her death in 1938 and it has now been placed in the museum that occupies her former Maryland home.

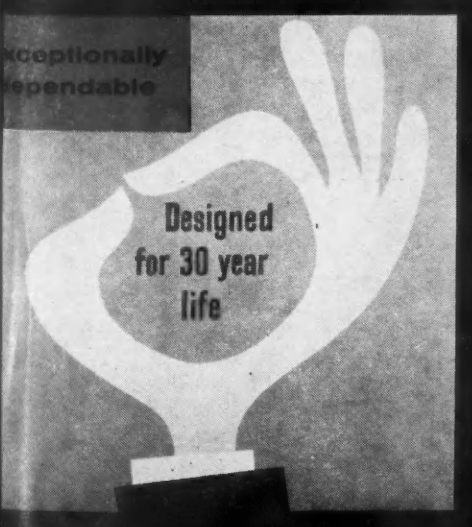
"A Real Blockhead"

WINDY Higgins of 1449 W. Fargo may not be the first dummy ever listed in the Chicago telephone book, but he is probably the first genuine blockhead.

Windy informed a Chicago Sun-Times reporter, through his ventriloquist-owner, Paul Stadelman, who lives with Windy, that he is quite proud of his listing in the directory. Incidentally, another of Windy's distinctions was getting 143 write-in votes when he campaigned for governorship of Kentucky.

"There's still a *coupla'* things I don't know about telephone work!"





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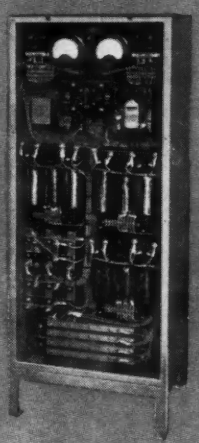

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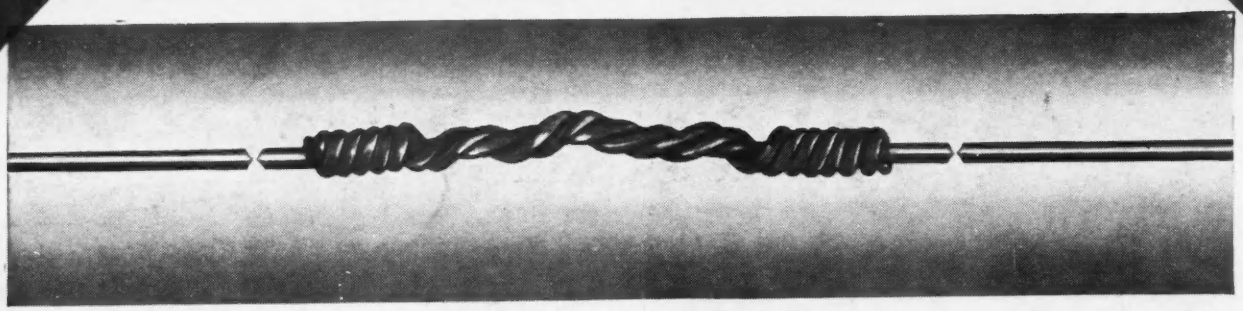

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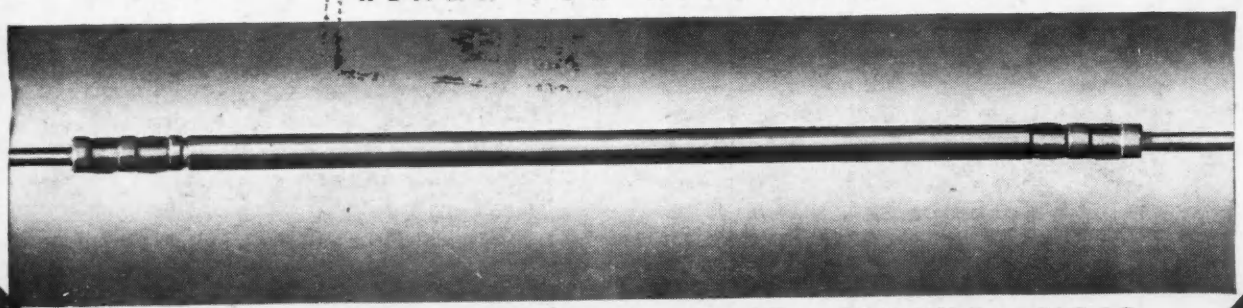

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